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ON THE

VARIETIES OF THE SHELLS M./

BELONGING TO THE

GENUS NASSA, LAM.

By F. P. MARRAT,

SCIENTIFIC STAFF, FREE PUBLIC MUSEUM,

LIVERPOOL.



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INTRODUCTION.

THE study of varieties in the genus *Nassa* has achieved one great object,—it has taught us the whole details of the plan on which the external ornamentation of shells has been elaborated. The whole of the variation, from the smooth shell to the most distinctly sculptured examples, is plainly to be seen as effected through almost imperceptible gradations.

An attempt might be made to show the lines of divergence by means of a diagram, but in all the instances in which this has been done in other branches of Natural History the results have not been satisfactory.

Neither a tree-like form nor any genealogical chart could be made to represent varieties in anything like the ramifications in which they occur in Nature, nor could we hope to succeed in such an undertaking without being able to procure a very large additional series of species such as would enable us to follow more closely the missing links in the scale of affinity.

For the most part, I do not regard a peculiar character possessed only by a single specimen as constituting a "variety." Even "intermediate links" between allied forms are generally represented in my series by two, three, or more, closely similar specimens.

Variation through the whole kingdom of Nature is the rule and not the exception. It is the prejudice exhibited by Scientists, against so much that is clear and distinct, that creates confusion. If studied as it exists, the whole group is manifestly developed, step by step, and we see the wisdom, power and beneficence of the Maker. We see the qualities implanted in these creatures to enable them to construct their houses with consummate skill, and to ornament them, either plainly, in Quaker fashion, or most elaborately in external sculpture. Men are constantly inventing theories to account for changes occurring in Natural History objects, and everything must bend to suit their special hypotheses.

Only one arrangement can be correct, and we have only to examine the materials and gain an extensive knowledge of the sections in each division to be convinced of this truth.

The greater part of the works on Natural History are written in the closets of the authors, who both theorise and copy to a large extent ; but, unfortunately, they copy errors as well as facts.

The study of variation has opened up a subject so vast in its dimensions that the mind almost shrinks from the task of estimating it. In every direction variation extends, in every way variation seems to ramify, until we gaze and wonder if there be any end.

Instead of 200 Species, at least 3,000 Varieties are before me, and the end appears nearly as far off as ever. Taking a careful survey of the shells under consideration, and noting more particularly the common forms and the changes presented by them, we are enabled to form an estimate of the enormous number likely to be met with, if we persevere in our work of collecting varieties.

Species are and have been made by men in their ignorance. Had they known the alliances, it would have been impossible for them to have committed such mistakes as are to be found in conchological books. Species have been and still are the ultimatum of scientists. It appears to me that they have an instinctive horror of the nameless. Lamarck described the *Nassa subspinos* from shells that were subspinos, not then knowing that there were carinated, costated, muricated, and smooth

varieties of it. At least six good (?) species have emerged from the varieties of Lamarck's shell: *N. lyrata*, Marrat, is the lyrate form; *N. tricarinata*, Lam., is the carinated form; *N. sculpta*, Marrat, is another; *N. sistroides*, Neville, *N. trinodosa*, Smith, and *N. corticata*, A. Ad. Another variety occurs showing a close affinity with the *N. muricata*, Quoy and Gaim., and the shell figured in Reeve's *Conchologia Iconica* as the *N. vibex*, Say, is a spiny form. Some of the shells from Ceylon are very closely connected with varieties of the *N. Gruneri*, D'k'r., and others with smoother ribs to the *N. Jacksoniana*, Quoy and Gaim.

In the preface to *Wood's Catalogue of Shells*, published in the year 1828, we find the following remark: "It has, therefore, been the endeavour of the author, in the absence of larger and more costly publications, to supply their place by a work which will incorporate in one volume figures of all the known shells." From the statement here quoted the number of shells known to conchologists at this date amounted to about two thousand. A little more than fifty years have elapsed, and we find that the numbers have increased to at least thirty thousand. Suppose we recommend the study of a single genus to each of our conchological students; if the success attending their efforts be in proportion to those resulting from the study of the *Nassæ*, before this century expires we will have at least five hundred thousand shells. We may name these shells and describe them as distinct, but they will not be so after we have finished; on the contrary, we may adopt another plan and name them varieties, but the same objection continues; the variety we have named as coming from any locality will be found to differ from the shells brought up from the same ground by the next haul of the dredge. It is a very disagreeable task to be compelled to state that the starting point of the systematist, upon which the whole fabric is built up, is wrong, and the whole of the deductions drawn from this source are erroneous; nevertheless, I am compelled to utter that which I believe to be strictly and unquestionably true. I cannot expect the conchologists, who are totally unacquainted with the materials upon which I have based my deductions, will be found to coincide with my views. If they had studied the genus

Nassa and had obtained a knowledge of the whole of the species either figured or described in it, they could not by this plan follow the intricate passages revealed by the study of variation. It is not by the intimate knowledge of the species themselves that these facts are elicited, but it depends upon a knowledge of the innumerable intermediate forms which diverge from them in every direction as to how these deductions are to be drawn. The conchologist and I are dealing with two distinct subjects, intimately connected, but differing materially in the result obtained; the one is confined to the number of the shells figured and described, while the other wishes to embrace every variety occurring in creation, most of which are neither figured nor described.

When the whole series is spread out, in lines in their trays these shells forcibly remind us of the people standing round a race-course when the horses are running. The different sizes in height and breadth, the different coloured clothes, the marked differences in form and feature, and the various casts of countenance, all exhibit, in proportion to the difference in the size of the objects compared, just such an amount of variation as we find in the varieties of the *Nassæ*.

The lines of descent from the largest to the smallest forms are often distinctly indicated, notwithstanding the large number of variable shells intervening between the first form and the last.

Shells may be selected, in series, that will show a clear line in the descending order from *Nassa glans*, Linn., to *Nassa incrassata*, Müll., variety *glaberrima*; but if these varieties are examined in the order in which they appear to fall naturally, then we find that an off-shoot takes place at the junction of the varieties of *Nassa mucronata*, A. Adams; another with *Nassa Marratii*, Smith; a third with the *Nassa gaudiosa*, Hinds, etc. Another of these lines may be started with the *Nassa trifasciata*, Gmel.; but in this case, instead of tracing smooth shells, as we did in the last, the shells would pass into coronated, costated, and cancellated forms before returning to a similar small form to that with which we started. Most of the costated varieties such as *Nassa nodifera*, Powis, the cancellated varieties such as *Nassa marginulata*, Lam., and the elongated series

such as *Nassa sequijorensis*, A. Adams, would form a part, and a very important part, in this line of descent. One of the series of shells in which the most gradual and almost imperceptible grades of variation takes place is that commencing with the *Nassa turrita*, A. Adams, and ending with a shell very little larger than *Rissoa costata*, viz., the *Nassa costulata*, found fossil in the Miocene of Bordeaux. This series includes the *Nassa limata*, Chemnitz; *prismatica*, Brocchi; *lucida*, Marrat; *proxima*, striata, and *versicolor*, C. B. Adams; *denticulata* and *rufocincta*, A. Adams; *crebristriata*, Carpenter; *annellifera*, Reeve; *ambigua*, Montague, etc.

In a long series of forms, commencing with shells representing the largest specimens in the genus, these can be traced with unerring certainty into others forming the smallest examples known to exist; again, the broadest varieties can just as easily be connected with others that are the narrowest examples in the group; and every grade of difference throughout the long lines of progressive variation is distinctly seen.

In a case of the shells having smooth forms, such as *N. glans*, Linn., the varieties may not be all smooth specimens, but they may vary into costate and even cancellated examples. Again, instead of there being a uniform rate of variation of thickness observable, one set will be almost transparent or thin and hyaline, and another thick and quite opaque. The sculpturing is in many cases confined to the upper whorls, but we find shells in which the pattern is commenced on the top gradually spreading in successive development until it covers the whole shell; in one case it may form smooth unsculptured ribs, or in another it may diverge into any of the forms of sculpture we meet with in other groups of shells. The tip of the spire may be of the same colour as the remaining portion of the shell, or it may vary into almost every shade of pink, rufous, brown, purple, or almost black.

The shells used as starting points are not intended as distinct forms, nor are they anything more than varieties chosen for the purpose of illustrating the subject of variation through a number of its ramifications. All the divisions marked with a dash will be found to assimilate with each other in some of the varieties

occurring in each section. The *N. nodifera*, Powis, is a costate variety, intermediate in its character between the smooth shells of *N. trifasciata*, Gmel., and the cancellated forms of *N. marginulata*, Lam., and similar remarks will apply to all the shells forming the starting points.

The arrangement of these shells is purely and simply as it exists in Nature, and only requires the student to examine it without paying any attention to the specific distinctions propounded in the works of the most learned conchological authors, to be convinced of its correctness—*NASSA IS ONE SHELL IN AN ENDLESS VARIETY OF FORMS.*

In my Paper on the "Variation of Sculpture," some of the modes in which these shells vary have been pointed out; others, still more complex, remain to be explained. Again, starting with the smooth forms, the first and possibly the most abundant variation is that in which delicate longitudinal lines appear all over the shell; at first they are irregular and interrupted, but at length they appear with tolerable regularity; then the cross-grooves make their appearance, beginning with a few and increasing in number until we have a finely cancellated shell; this is easily observed in varieties of *N. planicostata*, A. Ad., and *N. labida*, Reeve.

As the lines increase in size, and the cross-grooves in depth, the external pattern becomes larger, until it is of a very coarse kind,—this is only one of the simple forms; another, and one that is very common, is the different sizes of the ribs, traversed by cross-grooves, forming somewhat square spaces by their intersection,—these have rounded surfaces, derived from the rounding of the ribs (*N. reticulata*, Linn., is an instance). A curious instance of the square spaces formed by these intersecting lines being placed at nearly equal distances from each other is seen in specimens of the *N. nodulosa*, Marr. Smaller and more numerous squares may be seen on the *N. cremata*, Reeve (not Hinds!), *N. ravida*, A. Ad., etc. In other shells we find, not square spaces, but elongated ones passing into parallelograms of different sizes, and sometimes placed at slight angles to each other. Instances of this sculpture are found in the *N. stigmara*, A. Ad., etc. The nodules are

sometimes most irregular, both in size and rotundity ; an instance of this occurs most conspicuously in the *N. nodosa*, Marr.

The various changes that take place in the shelly matter deposited on the margin of the sutural canal is used by the conchologist as one of the characters for the discrimination of the different species ; how far this can be relied upon as permanent may be inferred from the following remarks, commencing with the shells having the body-whorl gradually tapering into the penult without increasing in thickness at the sutures. Examples—*N. rufula*, Reeve, *N. glans*, Linn., varieties, *N. Marratii*, Smith, &c. ; thickened, and forming a sharp callous edge to the sutural canal (suture canaliculate)—*N. spirata*, A. Ad., *N. lævigata*, Marr., var., and *N. canaliculata*, Lam., &c. ; tumid—as in *N. tænia*, Gmel., vars., *N. Glans*, Linn., vars., and *N. picta*, D'K'r., vars. ; the tumid band divided by groove-lines—*N. glans*, Linn., vars., *N. coronata*, Brug., and *N. lævigata*, Marr., vars. ; with close and numerous folds—*N. crispata*, Marr. ; beaded or coronated—*N. cælata*, A. Ad., var. *N. variegata*, A. Ad., and *N. creniata*, Hinds ; strongly noduled — *N. arcularia*, Linn. Every grade of difference between two extremes in shells, in what are termed of the same species, may be traced thus : *N. glans*, Linn., presents examples of each of these changes in the series from one end to the other, and several other variable shells change in a similar way ; and, as almost every shell has points of difference, and consequently varies, the shelly matter on the margin of the sutural canal becomes a doubtful character for specific distinction to be based upon.

The nodules near the sutures are either flattened like the ribs, or raised into large tubercles, such as we find on the *N. arcularia*, Linn., and all the intermediate sizes may be found in the different varieties. If the shell be finely cancellated, the beads will be small and numerous ; but if the ribs be broad and the cancellation coarse, the beads will be large. The groove-lines forming the transverse sulci are situated at almost every space on the shell, from the base to the apex. The ribs may extend from the suture to the base without having a single groove-line, or they may be intersected at regular intervals ; the line just below the suture in a shell before

me is so close that it appears to cut the beads into two parts, and another variety of a shell similar in almost every other respect, has the first groove-line in the centre of the body-whorl. When the ribs are interrupted at a distance from the suture, these short ribs are termed riblets, and they vary from being a little longer than broad, until they reach beyond the centre of the whorl. In a group of four specimens just examined, all the varieties with the exception of one are plainly ribbed, without being coronated, but the last has distinct beads ; thus we have a change from one to the other in specimens which are apparently merely varieties. From these observations taken from the shells, and not intended to support or illustrate any theory, it is very easy to see that instead of a fixedness in the characters used for the determination of species, exactly the opposite appears to be the case ; the specimens presenting such an amount of variation in every direction that it becomes absolutely impossible to affix any set of characters to them that will lead to their future recognition.

The sub-genus *Aciculina*, H. and A. Adams, is made up of varieties of one shell. The *N. labiosa*, J. Sowerby, in Wood's *Mollusca from the Crag*, is simply a grooved form of the Philippine shell, *N. maculata*, A. Adams, and Professor E. Forbes was quite correct in the statement of its being a variety of the *N. propinqua*, J. Sow., or *semistriata*, Brocchi ; the comparatively smooth forms pass into varieties of the former, and the flattened ribbed varieties into the latter shell. I do not consider the suggestion of Mr. Bell as being either impossible or even improbable, when he states that varieties of *N. propinqua* closely resemble, and may be considered to be, varieties of *N. trivittata*, Say.

The nodules occur in three different ways, viz., as protuberances on the ribs, in the square spaces formed by the transverse and longitudinal lines, and at the junction where the lines cross each other. In the *N. subspinososa*, Lam., the tubercles are very prominent on the ribs, and some of the varieties have them produced to a point, hence the name ; the cross-grooves are rather close and waved, but we find other varieties of this shell without the nodules, their place being occupied by strong raised ribs ; others again have sharp

carinae or keels running across the shell, and in shells very closely allied to them we find that the characters so prominent in the noded shells have completely changed and become smooth. This is a change from one of the roughest examples of external character to the smooth unsculptured shell. Specimens that are intermediate in sculpture and possessing both forms, that is, the pustules or nodules on the ribs, and those with nodules at the junction of the intersecting lines, may be seen in the *N. tritoniformis*, Kien. The occupation of the squares by rounded papillae occurs in the shells of *N. gemmulata*, Lam., from Ceylon, but the Philippine variety, as figured in Reeve at pl. 5, f. 29, is a ribbed shell, with intersecting cross-grooves, and every intermediate variety connecting the two are in a tray lying before me. The best examples of the third kind of pustules, viz., those occurring at each corner of the squares formed by the junction of the transverse and longitudinal lines, may be seen in the *N. reticosa*, A. Ad., *N. Roissyi*, Desh., *N. cremata*, Hinds, &c. *N. candens* of Hinds presents another modification of this last ornamentation; instead of the squares being distinct we have one, two, or even three transverse lines occurring between the principal ones, making the whole surface very irregular. A similar instance of intermediate transverse striae occurs in the varieties of *N. sordida*, A. Ad., from Australia, and I think it is very probable that the large variety of *N. Gruneri*, D'k'r., viz., the *N. echinata*, A. Ad., is a tubercular variety of *N. sordida*. None of these shells have permanent characters, nor can they be of any value specifically, inasmuch as there is no depending upon them. In a tray before me are four shells of *N. cremata*, Reeve, all collected together, and to all appearance in form, colour, and marking they are similar; but the pocket glass shows at once that there are no two of them alike; one has the squares similar to the figure in Reeve, the next forms parallel ribs in which the parallelograms are very narrow and elongated, a third shows a tendency to become pustular. Another tray has three shells in it, and these, like the last, were all obtained at one station and, if I am rightly informed, they all came up at one haul of the dredge; the nearest figured shell to which they may be referred is the *N. marginulata*, Lam., Kein., pl. 29,

f. 117; the first has square spaces, the second is ribbed and transversely grooved, and in the third the ribs are drawn up into sharp edges. Another tray containing four specimens exactly intermediate between the *N. cremata*, Reeve, and the *N. marginulata*, Lam., present still greater differences, *inter se*: the first has squares on the upper part of the body-whorl, each being divided by a grooved line; then the sculpture changes and the centre of the whorl has rounded—almost pustular ribs, and at about one third of the length of the whorl from the base the knotted squares occur, so that the three principal forms of sculpture are here present on the one shell; in another specimen the ribs are distant and simply intersected by cross-grooves; the callous of the columella also differs in each of the specimens; in the first it is thick and spreading, in the next it is less so, in the third it is still less, and in the fourth it is almost confined to the edge of the columella. The shells of *N. sequijorensis*, A. Ad., are for the most part of a character intermediate between the shells with smooth ribs and the cancellated varieties; they are finely or coarsely ribbed, some of them are smooth in the interstices between the ribs, others have a few sulci, and again we have the sulci close and numerous; in some specimens the ribs are smooth, in others they are sparingly cross-grooved, and lastly they are closely cancellated. Neither colour nor texture appear to be of any use in attempting to decipher the shells in the group to which *N. sequijorensis*, A. Ad., belongs; some of its varieties are white with pale rufous bands, and intermediate forms connect these with shells that are as nearly black as it is possible for shells to become. The texture is sometimes almost hyaline and the shells are thin, and these are connected by intermediate forms with others that are thick and heavy. The sutural canal in one specimen is closed or only represented by a fine line, but the specimens gradually change until it becomes rather widely expanded; the prickly serratures on the lip vary from the smallest and most simple rudimentary forms to the fullest state of development.

The greater part of the shells figured and described as new species have for their recommendation to our notice a single specimen, and that often in bad condition. Men are so anxious to have

their names appended to something new that every other consideration is overlooked by them. They cannot wait until sufficient evidence be produced either to confirm their opinions or show them that the characters they had given were incorrect, but down it goes on to paper, and there it remains. It will not be very difficult to decipher what amount of time and trouble is expended over these christenings when we see such a shell as the *N. fossata*, Gould, one of the largest shells in this genus, and about which there has been more discussion than any other, re-named in 1868, *N. Moreleti*, Crosse, ten years after it had been raised from a species to a sub-genus by H. and A. Ad., under the title of *Zaphon elegans*, Reeve.

In my list of affinities occurring amongst about twelve hundred varieties, the examples have been selected for the purpose of showing special peculiarities connecting shells said to form distinct *species*. All the more closely filling-in forms occurring between them have not been noticed.

The common shells, such as the *Nassa reticulata*, Linn., *incrasata*, Müll., with its variety *glaberrima*, Gmel., &c., appear to radiate into the shells of every other group, like a star composed of many rays.

We find these shells varying in form in every direction ; one shell will be tall and elongated, and the next lying beside it will be short and dumpy ; the body-whorl will be much longer than the spire, while its companion will have the spire longer than the body-whorl. One will be a giant, and another a pygmy ; and intermediate forms occurring between these extreme varieties will so connect the whole that it would be impossible to separate them without doing violence to observed facts.

I have five specimens of *N. compta*, A. Ad., all so named by men well known in the conchological world, and yet they are all different ; this being so, fixity of species seems to be relegated to transcendental conchology.

The *N. tænia*, Gmel., passes into the *N. canaliculata*, Lam., the *N. lens*, Chem., the *N. nitidula*, Linn., and the *N. trifasciata*, Gmel. ; and the partially ribbed shells are intermediate between it and *N. nodifera*, Powis, into which it merges, and the small cancellated

varieties from New Guinea connect it with the *N. marginulata*, Reeve, and the *N. margaritifera*, D'k'r. ; the two shells figured in Kiener, at pl. 14, f. 49, as varieties of *N. crenulata*, Lam., and Smith, P. Z. S., 1879, as *N. sequijorensis*, A. Ad., var., p. 181, pl. 20, f. 45, from Japan, are intermediate forms connecting the smooth with the cancellated shells.

The shell named and described in Philippi's *Abbildungen* under the title of *Nassa albescens* may be a variety of at least six others. These albinos are by no means uncommon. A shell before me is a white variety, with a purple apex, of the *N. sordida*, A. Ad., from Borneo ; a second slightly banded is from the Philippines ; another is nearly allied to the *N. hispida*, A. Ad. ; a third is a white variety, with a dark tip, of the granular form of the *N. nodicinta*, A. Ad. ; a fourth resembles the shell figured in Reeve's *Conchologia Iconica* as the *N. Isabellei*, D'Orb, but is white ; a fifth was sent me by a gentleman who gathered it on the shores of the Red Sea—it is white with a rufous apex ; and lastly, Reeve has figured another shell at pl. 15, f. 100, as the *N. albescens*, Phil. What the *N. bicolor*, Hombr. and Jaq., is, I do not know ; but it is quoted as a synonyme of Philippi's shell. Some of my white shells are without a coloured apex. A variety with square, flat spaces covering the shell, is in one of my trays. Varieties of other shells are often coloured at the apex ; *N. picta*, *rufula*, *mucronata*, etc., are examples, and several of these albinos have faint coloured transverse bands. I have two white varieties of the *N. splendidula*, D'k'r.

In the case of *N. lentiginosa*, A. Ad., following the line from the broad to the narrow shells, we find the varieties passing through the narrow forms of the *N. velata*, Gould, into the *N. polita* and *insculpta*, Marr., this latter shell being so like a *Terebra* that the late H. Adams had to be consulted to decide the question with regard to which genus (*Nassa* or *Terebra*) it should be referred.

Nassa micans, A. Ad., Reeve, pl. 21, f. 140, is the smooth form of the *N. planicostata*, A. Ad. At plate 12, f. 76, is figured a variety of the last-named shell, with only very close faint lines upon it, and the second figure, pl. 14, f. 94, represents it in its costate and sulcate forms. Another and somewhat shorter and

broader variety is before me ; it is also smooth like the first-named shell, and we have a corresponding variation of form in the variety *N. foveolata*, D'k'r., Martini and Chemnitz, 2nd. ed., pl. 6, f. 1, 2, 3, having an intermediate form in the shell figured by Reeve at pl. 13, f. 83. While some of the shells are broader than many of their more favoured figured brethren, others are much more elongated and narrower. A close alliance exists between the varieties of these shells and the varieties of the *N. succincta*, A. Ad., both as regards form, colour, and sculpture. The *N. exilis*, Powis, may be only a stronger ribbed variety. Some of the narrow shells belonging to the *N. marginulata*, Lam., and *N. sequijorensis*, A. Ad., completely amalgamate with them, and the *N. corniculum*, Olivi, has many points of resemblance with them. In the *N. crispata*, Marr., the whole surface is covered with crisp longitudinal and transverse lines, being closely covered with granules in one variety, showing the knotted structure in a second, and a third shows a curious series of concentric rings, closely studded with elongated semi-tubercular longitudinal short ribs.

I could make any number of good species, and, as Lamarck often exclaims, they shall be *jolie et tres distincte*, but I must then carefully avoid letting my collection be seen by any conchologist afterwards, more particularly by one who has a critical eye in his head, because he would detect the fraud. A case in point has just occurred to me. Examining some shells of *N. picta*, D'k'r., figured and described by conchologists as having a smooth columella, I found that some of them have the columella strongly plicate. Here, then, is a character that would serve to distinguish it, so that a child could detect it; but unfortunately, the comparison instituted between the smooth and the plicate varieties revealed all the intermediate stages between the one and the other. Suppose these two extremes had accidentally fallen into the hands of a species maker, this apparent distinction would satisfy any number of his followers as far as relates to the distinguishing marks of the two species.

These observations regarding the sculpture are a continuation of those enumerated in my former paper on the Variation of Sculpture. They differ more in the detail than in any other respect, and

all further remarks could only be directed towards the elucidation of elaborate structure, having a tendency to corroborate the broad facts laid down, and more fully to illustrate the minor particulars in many of the changes observed.

Some of the abnormal specimens of *Nassa nodifera*, Powis, have the ribs most irregular in width, and apparently without any kind of order with regard to their arrangement. Instead of starting with a narrow rib and proceeding in a regular line to the broadest, or *vice versa*, the narrowest frequently occurs either beside the broadest or between two broad ones. These different breadths of rib in the same shell may be accounted for in the following way, viz., by the uniting of two or more of the tubercles at the sutures, and in confirmation of this we have the partial union of two in one case and three in another in a specimen of *N. lævigata*, Marr., on which the ribs have just commenced forming, and have not obliterated the grooves between the approximate tubercles. Another departure from the ordinary rule of a single rib to a single tubercle occurs, and that rather frequently, in specimens of *Nassa arcularia*, Linn. It is the uniting of two or three ribs in a single tubercle, rendering the direction of the united ribs almost like the radii of a circle. This is variation in a directly opposite way to that of the former case, both of which occur among the abnormal forms.

The nucleolar whorls forming the last volutions of the spire are said to afford good specific characters; but a careful comparison with both hand-glass and microscope has failed to produce any satisfactory results with regard to their constancy. These characters only appear distinct when we deal with distinct and selected varieties; but when the intermediate forms come to be examined in detail the characters are no longer satisfactory.

The evidence brought forward in the following pages is not intended to be in a consecutive form, but shows more particularly the extraordinary amount of variation to be found in individual shells, and how they pass by almost imperceptible degrees from one to the other. We are aware of the utter impossibility of accomplishing the task of uniting the whole of the shells collected as varieties and showing the exact progress each line has made

toward the completion of the whole from the largest to the smallest forms. If we could visit the whole of the stations on the face of the earth and could by any means obtain a view of the animals feeding at the bottom of the seas and rivers, and could obtain specimens of every variety of the shells, we might be able to so place them that the whole of the progressive development would be seen to be perfect from beginning to end. Starting with a certain hypothesis and working in every direction, the more the independent facts tend to agree, without being strained to suit the theory, the greater will be the probability of the hypothesis being right. Commenting on the specimens we have been enabled to collect, and placing them in the order in which they seem to fall, we have long lines of varying shells passing in their descending order from the large to the very small; we have other lines interrupted in various parts of the series indicating that certain forms would fill the gaps and render the whole of that section perfect. These forms may or may not exist, and we are compelled to seek in other divisions of the series for analogous examples. Applying the facts, easily to be observed in the series of shells of *common* occurrence, to the gaps that are open in *rarer* lines of descent, we are enabled to judge pretty accurately of the whole plan laid down, and in this way advance much nearer to the ultimatum than might have been expected. The constant changes in the direction of the lines diverging from the main stems produce the effect on the imagination that the whole series are more or less connecting lines between the great descending branches.

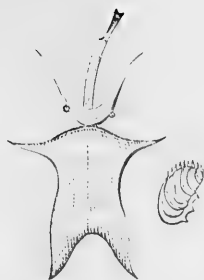
Whatever may be the result of future investigation with regard to variation, it must be borne in mind that the good figures and descriptions furnished by the conchologists who have gone before us have been the principal sources from which we have had to obtain our information. In the future it is more than probable that the photographer will furnish us with such accurate representations of the shells as will render the study of them comparatively easy. We may then be able to have a front and back view of each variety, more particularly of those taken in a single locality and at one haul of the dredge.

I do not wish to find fault with the men who described and figured shells; it is the determined pertinacity with which the species-maker adheres to and insists upon the characters being permanent with which I disagree. Naturalists in the early days of Conchology had few if any opportunities of judging how far the system of making shells distinct might be correct; in fact it is only within the last few years that we have been enabled to obtain the necessary materials for comparison.

With specimens most of which were rare and consequently high in price, even the rich were content with obtaining one or two examples of each. Of late years the influx of shells has produced the desired effect of rendering them easily procurable and at moderate prices, so that a few more or less is not now considered to be of much importance to the purchaser. The study of any particular division of this subject may be carried on for years by persons of moderate means, and materials may now be obtained to prosecute any line of investigation with comparative certainty of being able to pursue it with success.

The more extensive the subject of Natural History becomes the greater will be the necessity for men to confine their studies to separate branches of the science. By limiting our study to a single generic or even sub-generic division we can find ample means to examine the subject in all its details. Scientific men are and have been turning their attention more to the extension of knowledge in the form in which it is here carried out than in trying to grasp at more than the understanding is capable of retaining. Any of the divisions of the smaller Trochi, such as *Euchelus*, *Ziziphinus*, *Trochocochlea*, *Omphalius*, or that charming little group of shells *Clanculus*, might be examined with a certainty of obtaining very satisfactory conclusions.

The Mitres present characters very similar to those in the genus *Nassa*, and might be studied with every probability of interesting results.



Animal and Operculum of Nassa arcularia, Linn.

ANIMAL OF NASSA.

Head rather broad, often lunate, with pointed corners; eyes placed on stalks, either at the base or at various distances up to one-third from the tips of the tentacles. "In the *Nassa reticulata*, Linn., the mouth is a vertical fissure under the head, from which a very long proboscis is protruded, the structure of which is in all respects similar to that of *Buccinum undatum*, Linn., as are all the cerebral ganglia, the salivary glands, the double branchial plumes, the mucus fillets and the heart and auricle; all these organs I have dissected and compared with the same parts of that species, without finding any essential differences."—*Clark*. "*Bullia rhodostoma*, Gray, and *B. achatina*, Lam. Teeth of the radula, Eberhard, l. c. p. 14, pl. 5, f. 94, 95. Both agree well with Loven's figure for *Bullia annulata*, Lam., and show that this genus resembles *Nassæ* in the middle tooth being multidenticulated, and the true northern *Buccinums* in the denticulation of the lateral teeth."—*Zool. Record*, 1866, p. 179. The lingual ribbon is long and narrow, of crystalline transparency; it is often mounted as an object for the microscope. "Proboscis long, retractile, with corneous jaws, and a tongue armed with triple rows of teeth, of which the axile one is broad and sub-lunate, with numerous serratures, the laterals large and hamate."—

F. & H. Foot broad, expanded, and angulated in front; behind, acute as in *N. tænia*, Gmel., Q. & G., "Voy. de l'Astrolabe," pl. 32, f. 13; blunt, as in *N. Isabellei*, D'Orb., "Voy. dans l'Amerique," pl. 61, f. 19; slightly notched as in *N. incrassata*, Müll.; deeply nicked as in *N. mutabilis*, Linn.; bifurcate (each lobe divided into two) as in *N. marginulata*, Lam., var., "Voy. la Bonite," pl. 41, f. 1; and lobes distant as in *N. arcularia*, Linn.; caudal filaments varying in length; branchial plumes two; animal of various colours, blotched, lined, and dotted with lighter and darker tints.

The Nassæ are very active, and not at all shy when kept in confinement. They may be seen occasionally floating with the foot upwards; they feed on bivalves, the shells of which may be seen bored with circular holes; the shells of the Nassæ themselves are often seen similarly perforated. "*N. reticulata* is destructive to oysters, the shells of which are pierced by it."—*Zool. Record*. If the small round holes found bored in bivalve shells are to be attributed to the ravages of these and kindred mollusks, very few genera escape their attacks, and I have seen shells from West Africa, Ceylon, Singapore, and the Philippines so pierced that almost every second mollusk must have been preyed upon. A curious instance of want of judgment on the part of one of the Mollusca is before me—a solid spine of an echinus has been partially bored. Two holes are sometimes bored in one shell, the enclosed animal having been able to elude the grasp by retiring out of reach of the first attempt; how it fared on the second trial I cannot say.

The spawn cases differ in the different varieties; in *N. reticulata*, Linn., they are deposited on different substances, and are arranged in closely imbricated rows, being small compressed pouches. "In *N. incrassata*, Müll., they are solitary, yellowish, and shaped like a round flask with a small neck or opening at the top."—*Jeff*. They are found ranging from the littoral zone to 620 fathoms, the *N. brychia*, Watson, "Challenger" Expedition, having been obtained at this great depth. Some of the species have been observed to spring up and throw themselves over on being suddenly disturbed; they glide along the surface of the mud, leaving a

track indicating their line of march, at the end of which is a small round pellet; under this the creature conceals itself. The fry twist and twirl about by means of their ciliated lobes. *N. mutabilis* is used in Italy as an article of food and supplies the place of our periwinkle in the markets.

REFERENCES TO ANIMALS OF NASSA.

Voy. de l'Astrolabe.

- N. tænia*, Gmel. Quoy and Gaim., pl. 32, f. 13. Operculum, f. 15. Eyes situated at about $\frac{1}{4}$ the length of the tentacles from the base; foot large, expanded, tapering to a point at its posterior extremity (not bifid), with two caudal filaments.
- N. coronata*, Brug., pl. 32, f. 8. Operculum, f. 10. Eyes near the base of the tentacles; foot expanded, bifid at its posterior extremity, a filament on each side of the serrated operculum.
- N. arcularia*, Linn., pl. 32, f. 1. Operculum, f. 4. Eyes situated about $\frac{1}{4}$ the length of the tentacles from the base; foot bifid; caudal filaments not present in the figure.
- N. margaritifera*, D'k'r., pl. 32, f. 16. Eyes $\frac{1}{4}$ of the length of the tentacles from the base; foot bifid; operculum serrated.
- A second description; foot quadrate below, broader in front than behind, colour milk-white, sub-pellucid behind, bifid, forming an angle of about 45° at the end; siphon short, truncate, cylindrical and grooved, bluish; eyes on a broad expansion of the tentacles.
- N. bullata*, Marr., pl. 32, f. 5. Eyes near the base of the tentacles; foot bifid; operculum crenated.
- N. fasciata*, Lam., pl. 32, f. 18. Operculum, f. 21. Eyes near the base of the tentacles; foot strongly bifid; operculum semi-ovate, serrated.
- N. thersites*, Brug., pl. 32, f. 22. Eyes at about $\frac{1}{2}$ of the length of the tentacles from the base; foot bifid; operculum ovate, nearly plain (abnormal), serrated at the base (normal).
- N. pulla*, Linn., *globosa*, Quoy and Gaim., pl. 32, f. 25. Operculum, f. 27 (abnormal). Eyes at the base of the tentacles; foot bifid; operculum sharply serrated, sub-trigonal.

Voy. la Bonite

- N. nodifera*, Powis, pl. 41, f. 2. Eyes near the middle of the tentacles; foot bifid; operculum serrated,

- N. luteostoma*, Brod. and Sow., pl. 41, f. 5. Eyes near the base of tentacles ; foot bifid ; operculum serrated.
- N. gemmulata*, Lam., pl. 41, f. 11. Eyes near the middle of the tentacles ; foot bifid ; operculum serrated.
- N. nitidula*, Linn., pl. 41, f. 14. Eyes above the middle of the tentacles ; foot bifid ; operculum crenated.
- N. marginulata*, Lam., pl. 41, f. 1. Eyes $\frac{1}{3}$ from the base of the tentacles ; foot bifid ; operculum serrated.
- N. picta*, D'k'r. Eyes near the base of the tentacles ; foot bifid ; operculum deeply serrated. From a specimen sent by S. Archer, Surgeon-major, Singapore.

Voy. dans l'Amerique.

- N. dentifera*, Powis. D'Orb., pl. 61, f. 22. Eyes near the base of the tentacles ; foot plain, not bifid ; operculum plain.
- N. Isabellei*, D'Orb., pl. 61, f. 18, 19. Eyes below the line of the head at the base of the tentacles ; foot plain, not bifid ; operculum plain.
- N. riparia*, Del Chiaje's Sicily, vol. 3, pl. 47, f. 6. Eyes near the base of the tentacles ; foot slightly notched ; operculum plain.
- N. mutabilis*, Linn., Del Chiaje's Sicily, vol 3, pl. 47, f. 6. Eyes at the base of the tentacles ; foot bifid ; operculum serrated.
- N. laeve*, H. and A. Ad. (not Chemnitz), Rec. Moll., pl. 21, f. 7. Eyes near the base of the tentacles ; foot bifid, deeply cut ; operculum serrated.
- N. reticulata*, Linn. F. and H., pl. LL., f. 3. Eyes near the base of the tentacles ; foot bifid, lobes acute. Var. *nitida*, Jeff., Brit. Conch., vol. 4, p. 349. Eyes in the centre of the tentacles. "Among a number of specimens which I dredged in the Roach River, one had two eyes in the right hand tentacle ; the eyes were smaller than usual, and close together."—*Jeff.*
- N. incrassata*, Müll. F. and H., pl. LL., f. 1. Eyes near the base of the tentacles ; foot slightly notched. Var. *glaberrima*, Gmel., Del Chiaje's Moll. Sic., pl. 48, f. 5. Eyes as in the last ; foot bifid, lobes acute. Var. *varicosa*, Turt., F. and H., pl. LL., f. 2. Eyes as in the two last ; foot bifid, lobes acute.
- N. corniculum*, Olivi. Zool. Adriat., p. 144. Eyes about $\frac{1}{3}$ from the base of the tentacles ; foot bifid, lobes acute ; operculum serrated. Another specimen had the eyes near the base of the tentacles ; foot plain ; operculum crenated,

DISTRIBUTION.

From Greenland to the Equator these mollusca roam every sea, and scarcely any attempt at deep-sea dredging has been carried on in the seas of Europe, Asia, Africa, or America without shells of this genus having been hauled up; they are most plentiful within the tropics, where the greatest number of varieties also exist. One of the largest forms—viz., the *Nassa fossata*, Gould—occurs in California. The Mediterranean varieties are both curious and interesting, presenting such an extraordinary diversity of sculpturing that inexperienced conchologists have exercised their talents and ingenuity in describing shells as distinct that appeared to all reasonable men to be only varieties of common and well-known forms.

OPERCULUM OF NASSA.

Serrated.

<i>gemmulata</i> , Lam.	<i>picta</i> , D'k'r.	<i>mangelioides</i> , Reeve.
<i>coronata</i> , Brug.	<i>mucronata</i> , A. Ad.	<i>delicata</i> , A. Ad.
<i>Kieneri</i> , Anton.	<i>Webbei</i> , Petit.	<i>semigranosa</i> , Dkr.
<i>mutabilis</i> , Linn.	<i>varicifera</i> , A. Ad.	<i>labecula</i> , A. Ad.
<i>luteostoma</i> , Brod. and Sow.	<i>splendidula</i> , D'k'r., or strongly crenated.	<i>complanata</i> , Powis.
<i>reticulata</i> , Linn.	<i>fraudulenta</i> , Marr.	<i>livescens</i> , Phil.
<i>pulla</i> , Linn.? <i>globosa</i> , Quoy. <i>triangular</i> .	<i>arcularia</i> , Linn.	<i>Gayi</i> , Kien.
<i>gibbosula</i> , L., and var. <i>circumcincta</i> , A. Ad.	<i>fasciata</i> , Lam.	<i>crebristriata</i> , Carp.
<i>tiarula</i> , Kien.	<i>albescens</i> , D'k'r.	<i>crenolirata</i> , A. Ad.
<i>Jacksoniana</i> , Quoy.	<i>Gruneri</i> , D'k'r., var. <i>hispida</i> , A. Ad.	<i>bimaculosa</i> , A. Ad., and var. <i>immersa</i> , Carp.
<i>autillarum</i> , Phil.	<i>margaritifera</i> , Reeve (not D'k'r.)	<i>picta</i> , with a red brown centre.
<i>thersites</i> : some are serrated, others crenated, and others again are plain. Quoy and G., pl. 32, f. 34.	<i>Woodwardii</i> of Authors, Forbes (?).	<i>sesarma</i> , Marr.
	<i>neritea</i> , Linn.	<i>argentea</i> , Marr.

Crenated.

thersites, Brug.	cærulea, Marr., almost	obsoleta, Say.
bimaculosa, A. Ad.	plain in some of the specimens.	Roissyi, Kien.
lævigata, Marr.	luctuosa, A. Ad., drab,	sparta, Marr.
glabella, Sow.	with a red stripe in the centre.	Smithii, Marr.
papillosa, Linn.		
(I have only seen one).	sculpta, Marr.	incrassata, Müll., is
glans, Linn.	mitralis, A. Ad.	plain, crenated or ser-
suturalis, Lam.	(only slightly).	rated.

Plain.

tænia, Gmel.	monile, Kien. This	lyrata, Marr.
exilis, Powis.	operculum was crenated when fresh, and has become plain by drying.	or slightly crenated.
plicosa, D'k'r.	margaritifera, Dkr., or very slightly crenated.	semistriata, Brocchi, or slightly crenated.
trifasciata, Gmel.	luteola, Marr.	punctata, A. Ad., with a broad red-brown band across the centre.
sequijorensis, A. Ad.	dentifera, Powis.	

VARIETIES OF NASSA.

- 1 Glans, Linn. Smooth at the sutures. Reeve, pl. 1, f. 5.
Cuming, Philippines.
- 2 Slightly coronated at the sutures.
- 3 Similar in form, colour and marking to the two previous shells,
but irregularly tubercled at the sutures. *N. intermedia*, D'k'r.
- 4 Body-whorl broader, paler, tubercles not much raised.
- 5 Similar to the last, but much deeper canaliculate, nodules strong.
- 6 Pure white, marbled with pale brown, apex purple, upper
whorls costate, slightly tubercled.
- 7 Translucent, passing into white varieties of *N. rufula*, Reeve,
pl. 2, f. 14. (? Kien.)
- 8 Reeve, pl. 2, f. 11. Port Jackson.
- 9 Whorls less rounded, not coronated, apex dark purple.
- 10 Narrow and elongated. Sandwich Islands.
- 11 Spotted with white and brown at the sutures, showing an
approach to the *N. mutabilis*, Linn.
S. Archer, Surgeon Major, Singapore.
- 12 Whorls flattened, sutures spotted, flamed with reddish brown,
very similar in every respect to the elongated forms of *N.*
mutabilis, Linn.
- 13 Very closely related to the *N. elegans*, Kien., pl. 24, f. 97.
(Not Reeve!)
- 14 Broad and short, passing into *N. rufula*, Reeve, and *N. spirata*,
A. Ad.
- 15 Dark brownish yellow, upper whorls cancellated, coronated,
passing into the *N. hirta*, Kien.
- 16 Similar to the last, but strongly costate. *N. suturalis*, Lam.
(variety of glans of all the old authors.) Mauritius.
- 17 Strongly costate and coronated. Australia.
- 18 With shorter, broader and rounder whorls, ribbed, resembling
N. marginulata, Lam., in form.
- 19 Similar in form, but much thicker, resembling *N. hirta*, Kien.,
on the one hand, and *N. levigata*, Marr., on the other.

- 20 *Spirata*, A. Ad. Reeve, pl. 2, f. 13. Swan River.
- 21 Similar in both form and colour to the *Eburna spirata*. Borneo.
- 22 More elongated, passing into *N. mucronata*, A. Ad.
- 23 Banded with reddish-brown lines.
- 24 With the whorls more regular than the last.
- 25 *Sufflata*, Gould. Hong Kong Harbour.
- 26 *Mucronata*, A. Ad. Reeve, pl. 2, f. 8.
- 27 *Mucronata*, A. Ad. Throat deep purple, tip sharply and regularly plicate.
- 28 Between *N. mucronata* and *N. picta*.
- 29 Between *N. picta*, D'k'r., and *N. rufula*, Reeve (not Kiener!).
- 30 Coronated at the sutures, two-banded.
- 31 Between *N. Kieneri*, Anton, and *N. picta*, D'k'r.
- 32 *Filosa*, Gray. Reeve, pl. 6, f. 35.
- 33 More oblique; is the *N. obliquata*, A. Ad. P.Z.S., 1851, p. 105. Philippines.
- 34 Elongated, apex pink.
- 35 Very elongated, coronated at the sutures, like the *N. graphitera*, Beck, blotched and spotted with dark brown.
- 36 Elongated, semicostate; *N. gaudiosa*, Hinds. Reeve, pl. 8, f. 48.
- 37 Intermediate between *N. gaudiosa*, Hinds and *N. graphitera*, Beck. Howland's Islands.
- 38 *Lilacina*, Gould.
- 39 Between the elongated varieties of *N. glans*, Linn., and *N. graphitera*, Beck.
- 40 *Marratii*, Smith. Jour. Linn. Soc., vol. 12, p. 453, pl. 30, f. 4. San Christoval.
- 41 Pale buff, thick, plain. Howland's Islands.
- 42 *Gaudiosa*, Hinds. Japan.
- 43 Paler, more elongated, and semicostate. Sandwich Islands.
- 44 Reeve, pl. 13, f. 85. Is more turreted, ribs longer.
- 45 Prompta, Marr. (See description.)
- 46 Shell elongated, costate, passing into the *læta*, Phil. Zeit. f. Malak, 1848, p. 144.
- 47 *Polita*, Marr. (See description.) Taylor Collection. Mauritius.
- 48 White with longitudinal orange lines, flamed and blotched with pale brown.
- 49 Spotted, sutures crudely crenated. Taylor Collection. Philippines.

- 50 *Compta*, A. Ad. P.Z.S., 1851. Reeve, pl. 16, f. 106.
Cape St. Antonia, Africa.
- 51 Purple; the colour is probably produced by acid.
Taylor Collection.
- 52 Elongated, a form of *N. mucronata*, A. Ad., passing into the narrow forms of *N. glans*, Linn.
- 53 Somewhat pellucid, white, with a few scattered reddish spots, the upper whorls costate, the ribs continuing on to the last whorl.
- 54 Dull grey, apex mucronate, semicostate, lined transversely, interior pale blue.
- 55 *Reeveana*, D'k'r. Phil. Abbild., pl. 2, f. 3. This is not the *N. sertula*, A. Ad., but a form of the *N. picta*, Dunker.
- 56 *Picta*, D'k'r., with dark brown and white interspersed over the shell; it is closely allied to the *N. gaudiosa*, Hinds, but is broader than the figure in the "Voy. Sulph."
- 57 With two brown bands on the last whorl.
- 58 *Sertula*, A. Ad. P.Z.S., 1851, p. 107. Reeve, pl. 14, f. 89.
Philippines.
- 59 Intermediate between *N. sertula*, A. Ad., *concinna*, Powis, and *concentrica*, Marr.
- 60 *Concinna*, Powis. Reeve, pl. 14, f. 91.
- 61 *Mustelina*, Gould. Pro. Bost. Soc. Nat. Hist., vol. 7, 1860.
Ousima.
- 62 *Zonalis*, A. Ad. Reeve, pl. 14, f. 93.
- 63 Rather strongly semicostate, passing into the following shell.
- 64 *Capensis*, D'k'r. Zeit. f. Malak, 1846. Krauss' Die Sudaf. Moll., 1848 = *pulchella*, A. Ad. P.Z.S., 1851. Reeve, pl. 14, f. 90.
Port Elizabeth.
- 65 Beautifully mottled. Ditto.
- 66 Similar in colour and form, but longitudinally ribbed, strongly transversely grooved. Port Elizabeth.
- 67 With a dark brown central band.
- 68 White.
- 69 More elongated and narrow, intermediate between *N. capensis* and *N. teretiuscula*, A. Ad.
- 70 Aperture shorter, last whorl a little more expanded than the *N. teretiuscula*, A. Ad.
- 71 Beaded at the sutures; another variety of *N. teretiuscula*, A. Ad.
- 72 Dark bluish ash, costate throughout, showing an affinity with the *N. exilis*, Powis.

- 73 *Scalarina*, Marr. Pamphlet, pl. 1, f. 27. New Zealand.
- 74 With the last whorl semicostate.
- 75 *Vittata*, A. Ad. P.Z.S., 1851, p. 114. Reeve, pl. 24, f. 160.
An elongated *N. teretiuscula*, A. Ad.
- 76 Ribs smooth, interstices closely grooved, *N. serotina*, A. Ad.
Australia.
- 77 With smooth interstices.
- 78 Wax yellow, longitudinally ribbed and transversely grooved,
N. tenella, Reeve, pl. 16, f. 163. Cases Bay.
- 79 Smaller, resembling varieties of *N. incrassata*, Müll., into
which it merges; allied to the *N. serotina*, A. Ad. Reeve,
pl. 16, f. 107.
- 80 Very narrow, white, and closely cancellated; is the *N. rissoides*,
Marr. Pamphlet, pl. 1, f. 25.
- 81 *Exilis*, Powis. P.Z.S., 1835, p. 95.
- 82 Between *N. exilis*, Powis, and *Stimpsoniana*, C. B. Ad.
- 83 *Glabrata*, A. Ad. P.Z.S., 1851, p. 114. Reeve, pl. 24, f. 157.
- 84 Much narrower than the last, with darker and more numerous
bands. *N. glabella* is the smooth form, *N. maculata* is
grooved, *N. labiata* is the costate form, and *N. vittata* con-
nects them with *N. capensis*; *N. glaberrima*, Gmel., and
N. incrassata, Müll., are very closely connected.
- 85 *Glaberrima*, Gmel. Martini, pl. 125, f. 1177. Wood's Index,
pl. 23, f. 90. Mediterranean, Eastern Seas, &c.
- 86 Freckled with brown and white dots.
- 87 *Unifasciata*, Kien., pl. 14, f. 50, is smooth, with a central
brown band.
- 88 Taller and narrower than the last.
- 89 *Cuvierii*, Payr. Corsica, pl. 8, f. 17, 18; is beautifully mottled.
- 90 Very dark brown, columella expanded, resembling the shell
figured by Kiener, pl. 20, f. 76.
- 91 Like *unifasciata*, band broader, and tessellated with brown and
white.
- 92 Dark brown, very like the shell figured by Kiener as *N.*
polygonata, pl. 27, f. 107.
- 93 Closely allied to the last is another shell, figured by Kiener at
pl. 20, f. 76, as the *N. Cuvierii*, Payr.
- 94 With short interrupted brown transverse lines, varix strong.
- 95 Has transverse continuous lines, and is broader. *N. tinei*,
Marav.

- 96 Greyish brown, tessellated below the sutures with brown and white. Kiener, pl. 20, f. 75.
- 97 Plain at the sutures.
- 98 Smooth, costate, with a brown central band. Reeve, pl. 19, f. 129.
- 99 Of a pale cream colour, with interrupted brown bands, ribbed and transversely grooved, broad.
- 100 Narrower, paler, tessellated at the sutures. Reeve, pl. 20, f. 134.
- 101 Yellow, lined and tessellated with brown. A very beautiful shell.
- 102 With transverse striæ.
- 103 Smooth, with two dark bands.
- 104 Columella smooth.
- 105 Columella plicate.
- 106 Rising to an acute point, resembling varieties of *N. versicolor*, C. B. Ad., and *N. ambigua*, Mtg.
- 107 White, costate.
- 108 Finely transversely grooved and semicostate; is the *N. maderensis*. Reeve, pl. 27, f. 182. Madeira.
- 108A Gallandiana, Fisher. Jour. de Conch., 1860, p. 81, pl. 2, f. 6, Spain and Portugal.
- 108B A shell with close transverse striæ is figured in Savigny's Egypt, pl. 6, f. 3.
- 109 Tall, white, slightly spotted below the sutures, strongly variced.
- 110 Broader and somewhat granular, allied to *N. pauperata*, Lam.
- 111 Broad, strongly costate, ribs curved, closely lined transversely.
- 112 Broad, cancellated, is the *N. cancellaria*, Poties and Michaud, Gal. des Moll., p. 374, pl. 32, f. 3, 4.
- 113 Resembling some of the small varieties of *N. costata*, A. Ad. Reeve, pl. 21, f. 142.
- 114 Approaching in form and colour the *N. gaudiosa*, Hinds. "Voy. of the Sulp.," pl. 9, f. 16 (not Reeve!).
- 115 Cancellated. Captain Horsfall, Malta, Palermo, &c.
- 116 Closely and finely ribbed, of a pale greyish ash colour, closely allied to the varieties of *N. planicostata*, A. Ad.
- 117 With a broad dark brown central belt, dotted with white.
- 118 Having two belts, very like the *N. zonalis*, A. Ad.
- 119 Columella, deep orange.

- 120 Deformed, all the whorls are oblique.
- 121 Small, white, banded at the sutures ; in great numbers, mixed with small varieties of *N. mutabilis*, Linn. Mediterranean.
- 122 Similar to the last, but very variable in colour.
Keeling's Islands.
- 123 In form and colour resembling varieties of *N. teretiuscula*, A. Ad.
- 124 Small, smooth, costate throughout.
- 125 Tall, strongly costate, passing into the *N. capensis*, D'k'r.
- 126 A variety of *N. glaberrima*, Gmel. ; is so like the next that if placed in the same box, they could not be distinguished from each other.
Malta.
- 127 Delicata, A. Ad. P.Z.S., 1851. Reeve, pl. 27, f. 180.
Philippines.
- 128 More elongated, ribs closer and more numerous. Ceylon.
- 129 With thick ribs, shell more elongated. S. Archer, Singapore.
- 130 Oblique, with three rows of nodules on the ribs.
- 131 Ribs spiny, shell more cylindrical than the last, resembling the *N. echinata*, A. Ad., but is more glossy.
- 132 Showing a close affinity with *N. crenolirata*, A. Ad.
- 133 Crenolirata, A. Ad. Reeve, pl. 25, f. 165.
S. Archer, Singapore.
- 133A Shell twice the size of the last, and much more oblique.
- 134 Ribs spiny, as in *N. muricata*, Quoy and Gaim.
- 135 Showing both in form and colour an affinity with the *N. complanata*, Powis, varieties.
- 136 Passing into the *N. Gruneri*. Reeve, pl. 12, f. 78 (not Dunker!).
- 137 Shell buff, tip purple, without bands.
- 138 Smaller and banded, *N. geniculata*, A. Ad. Reeve, pl. 26, f. 171.
Philippines.
- 139 Ribs smooth, distant, interstices very closely striated.
- 140 Large, with strong ribs, and prominent nodules.
- 141 Taller, narrower, semicostate, ribs smooth.
- 142 Labecula, A. Ad. P.Z.S., 1851, p. 98. Reeve, pl. 25, f. 166.
- 143 Fraterculus, Marr. Is very closely allied to *N. sinusigera*, A. Ad. It has a thick callous.
- 144 Narrower and more elongated than the last ; is the *N. fraudulentula*, Marr. Pamphlet, p. 8, pl. 1, f. 24.
- 145 Mangelioides, Reeve, pl. 23, f. 152. Australia.

- 146 *Corticata*, A. Ad. P.Z.S., 1851, p. 98. Reeve, pl. 28, f. 189.
New Zealand.
- 147 Nearly smooth.
- 148 Ribbed and banded with brown.
- 149 Body-whorl short, ribbed and noduled, brown, with a central white band; young shells have a crenated operculum; in old ones it is spiny.
- 150 *Sinusigera*, A. Ad. P.Z.S., 1851, p. 100. Reeve, pl. 17, f. 113.
Philippines.
- 151 Shell larger, ribs more distant than the last, passing into small forms of *N. costata*, A. Ad.
- 152 *Semicostate*.
- 153 Nodules at the sutures very strong.
- 154 In form very like the *Cyllene lyrata*, Lam.
- 155 Strongly ribbed and transversely grooved.
- 156 Callous of the columella spreading, showing an approach to the *N. callosa*, A. Ad.
- 157 Ribs very close and numerous in front, the last or body-whorl has no groove below the suture.
- 158 *Callosa*, A. Ad. P.Z.S., 1851, p. 98. Reeve, pl. 28, f. 185.
Is a variety of *N. sinusigera*, A. Ad., with an extended callous.
Philippines.
- 159 Passing into the *N. crenolirata*, A. Ad.
- 160 Noduled on the ribs, passing into the *N. nodicostata*, A. Ad.
- 161 Nodules on the ribs much larger than the last, showing a relationship with the *N. Gruneri*, Reeve, (not Dunker!)
- 162 Is intermediate between the *N. Gruneri*, Reeve, and *N. sinusigera*, A. Ad.
- 163 *Gruneri*, Reeve, pl. 12, f. 75. Philippines.
- 164 Intermediate between the last and *N. crenolirata*, A. Ad.
- 165 Intermediate between *N. crenolirata* and *N. corticata*, A. Ad.
- 166 Shell with four nodular keels, each nodule is white and is connected with its nearest neighbour by a fine brown line.
- 167 *Muricata*, Quoy and Gaim. "Voy. de l' Astr.," pl. 32, f. 32, 33.
Columella granular.
- 168 White, columella with three or four folds at the base.
- 169 *Columella* smooth, expanded. Reeve, pl. 11, f. 73.
New Ireland, &c.
- 170 Intermediate between the last and *N. horrida*, D'k'r.

- 171 Ribs slightly nodose.
 - 172 Ribs thin and distant.
 - 173 More elongated, passing into the *N. echinata*, A. Ad.
 - 174 Body-whorl short, spire elongated, noded, not more than half the usual size.
 - 175 White, with purplish-brown bands.
 - 176 White, with a broad rufous band on the body-whorl, and a fine thread-like line of a similar colour at the suture.
 - 177 Short and broad, resembling the *N. Gruneri*, D'k'r.
 - 178 Strongly noded, banded with purple, apex purple, as in *N. geniculata*, A. Ad.
 - 179 Ribs rounded, passing into the *N. pura*, Marr.
 - 180 *Horrida*, Dkr. Phil. Abbild., pl. 2, f. 8. = *curta*, Gould. Samoa Is.
 - 181 Of a rufous brown, passing into *N. muricata*, Quoy and Gaim.
 - 182 Shell elongated.
 - 183 Short and broad. Reeve, pl. 11, f. 69. Andaman Islands.
 - 184 *Vibex*, Reeve, pl. 12, f. 81. H. and A. Adams' Recent Mollusca, vol. 1, p. 121. (Not Say!) Philippines.
 - 185 *Subspinosa*, Lam., vol. 10, p. 173. Kien., pl. 26, f. 103. Ditto.
 - 186 Broad, nodules very prominent.
 - 187 Shell more elongated, with two spiny keels.
 - 188 Shell with three keels, probably the *N. tricarinata*, Lam.
 - 189 Dark brown, banded with white.
 - 190 Showing a close affinity with varieties of *N. muricata*, Q. and G.
 - 191 Pale olive, banded with brown and white. A beauty!
 - 192 The nodules connected by the ribs.
 - 193 Is a tall form, with broad ribs, nodules fading.
 - 194 Closely resembling the *N. corticata*, A. Ad.
 - 195 Strongly ribbed, but only noded at the sutures. Philippines.
 - 196 Tall and elongated, slightly ribbed, covered with a brown epidermis
 - 197 *Lirella*, Marr. Pamphlet, p. 6, pl. 1, f. 18. Philippines.
 - 198 Whorls rounder, „ pl. 1, f. 19.
 - 199 Brown, with a central white band, ribs smooth and shining.
 - 200 *Sculpta*, Marr. Pamphlet, p. 5, pl. 1, f. 30. Philippines.
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- 201 *Fossata*, Gould. = *Elegans*, Reeve. Con. Syst., p. 234, pl. 268, f. 3, 1841-2. (Name pre-occupied by J. Sow., 1824). California.

- 202 Pagoda, Reeve. Triton, pl. 22, f. 97. Nassaria, H. & A. Ad.
Hab. ?
- 203 Ribs wider apart, the transverse lines are very distinct.
Gault. Test., pl. 51, f. 1.
- 204 Verrucosa, Gmel. Gault., pl. 43, f. M.
- 205 Ribs strong, shell much paler in colour. N. decussata, Reeve,
pl. 18, f. 121. =canescens, C. B. Ad. -
- 206 Similar to the last, but very pale, as if the colour had faded.
- 207 With the ribs as in the figure, Kiener, pl. 30, f. 3.
- 208 The ribs are obsolete on the back of the last whorl, transverse
granular striæ very distinct.
- 209 Much more elongated, with very strong ribs and nodules.
- 210 Shorter and broader, like the shell figured by Kiener, but
strongly noded.
- 211 Corpulenta, C. B. Ad. Panama.
- 212 Rufolineata, Marr. =polygonata, Reeve, (not Lam.!) pl. 18,
f. 123. Philippines.
- 213 Acuta, Carp't'r. Brit. Mus. Mazatlan Shells, p. 497.
- 214 Polygonata, Lam. Kien., pl. 29, f. 119.
- 215 Polygonata, D'Orb.; "Voy. dans L. Amer. Merid.," p. 433.
West Indies.
- 216 Tritoniformis, Kien., pl. 30, f. 2; operculum triangular,
crenated on one side. West Africa.
- 217 Large. Reeve, pl. 18, f. 120.
- 218 Short and broad, with strong varices; in the Collection of
A. W. Langden, Esq., Hastings.
- 219 Very pale, almost white, columella callous, slightly expanded.
- 220 Narrow and elongated; this variety was named in the Brit.
Mus., N. acinosa, Gould.
- 221 Small, passing into varieties of N. incrassata, Müll.
- 222 Ribs few and distant.
- 223 Incrassata, Müll. =ascanias, Brug.; Lacepedii and Ferrussaci,
Payr.; macula, Mtg; minuta, Penn; and exilis, Gmel.
Seas of Europe, &c.
- 224 Whorls granular, lip expanded, columella plicate, intermediate
between the last and N. tritoniformis, Kien.
- 225 Broad, strongly ribbed and cross-grooved, passing into the
varieties of N. tritoniformis, Kien.
- 226 Taller, lip expanded, Reeve, pl. 17, f. 114.

- 227 Similar to the last in form, but having oblique ribs.
- 228 Ribs oblique, whorls angular.
- 229 Whorls round, shell short, white, very thick, callous expanded.
- 230 Yellowish-brown, transversely lined, ribs oblique.
- 231 Shorter and broader than the last, lined and banded.
- 232 Of a pale rose colour, the ribs and outer lip are white.
- 233 Broad and short, passing into the varieties of *N. ambigua*, Mtg.
- 234 Rosacea, Lam. Reeve, pl. 27, f. 183.
- 235 Similar to the last, but strongly variced.
- 236 White, with broad, brown bands, apex pink.
- 237 Closely allied to varieties of *N. Gayi*, Kien.
- 238 Shell short, broad, thick, strongly ribbed and lined.
- 239 Dark brown, with a white central band, columella smooth, passing into the *N. coccinella*, Lam.
- 240 A short, broad, two banded variety.
- 241 Pale, with a brown, tessellated, central band, callous expanded. *N. ascanias*, Kien., pl. 26, f. 104.
- 242 Ribs oblique, callous more expanded than the last; is the *N. coccinella*, Lam. Kien, pl. 25, f. 98.
- 243 Intermediate between *N. incrassata*, Müll., and *N. glaberrima*, Gmel.
- 244 Dark brown, callous constricted; is the *N. coccinella*, Lam. Kien., pl. 20, f. 77.
- 245 Taller and more turreted than the last, strongly variced.
- 246 Tall, with transverse, wavy thread lines, columella wrinkled.
- 247 Similar to the last in form, but having a smooth columella.
- 248 Tall, with oblique ribs; it is about the size and closely resembles the *N. asperula*, Brocchi.
- 249 Resembling in colour, form, and in having broad bands, the *N. miga*, Adans.
- 250 Ribs and cross-grooves strongly marked.
- 251 Granules small, varices almost opposite to each other, like the *Ranella*; is the *N. varicosa*, Turton, *N. pygmæa*, Lam.
Seas of Europe.
- 252 Smaller and much broader than the last.
- 253 Ferussacci, Payr., pl. 8, f. 15, 16.
- 254 More elongated than the last.
- 255 Lacepedii, Payr., pl. 8, f. 13, 14.

- 256 Narrow and elongated, rough, passing into the *N. scabriuscula*, Powis.
- 257 Whorls angular, dark brown, with a pale central band, rough.
- 258 Columella bright yellow, operculum crenated on the side next to the inner lip.
- 259 Broad, passing into the *N. collaria*, Gould.
- 260 *Collaria*, Gould. Reeve, pl. 25, f. 169. Panama.
- 261 With the upper whorls closely striated; is the *N. crebristriata*, Carpenter. Mazatlan Shells, p. 499. Panama.
- 262 Elongated, with strong white varices.
- 263 Ribs oblique, covered with a pale epidermis.
- 264 Broader and more cylindrical, is a shell figured in Mart. and Chem., ed. 2, pl. 6, f. 12, 13.
- 265 Finely granuled, passing into the *N. multigranosa*, D'k'r.
- 266 Whorls tumid, shell rather thin, *N. multigranosa*, D'k'r. Phil. Abbild. pl. 2, f. 13.
- 267 Thicker, whorls more regular than the last, granules larger; is the *N. hotessieri*, D'Orb. Cuba.
- 268 Lip and columella expanded, tapering to an acute point, resembling the *N. nodulifera*, Phil.
- 269 *Encaustica*, Brusina.
- 270 *Gimmellari*, Biondi. Jour. de Conch., vol. 7, p. 303. Is strongly ribbed and transversely striated.
- 271 Tall, thin, passing into and completely blending with the varieties of *N. capensis*, D'k'r.
- 272 Dark brown, white at the base.
- 273 Tall and narrow, of a beautiful rose colour.
- 274 Passing into the *N. labiata*, A. Ad.
- 275 *Callandiana*, Crosse. Jour de Conch., 1863, p. 81, pl. 2, f. 6.
- 276 Slightly plicate, shell very oblique; is the *N. (Strombus) glabrata*, Sow. Thesau. Conch., pl. 8, f. 66, 67.
= *N. obliqua*, Kien. West Africa.
- 277 Strongly plicate.
- 278 Banded with blueish grey, unspotted, columella and inner lip strongly plicate, showing a close affinity with the *N. tænia*, Gmel.; is the *N. cærulea*, Marr.
- 279 Intermediate between the *N. incrassata*, Müll., and the *N. teretiuscula*, A. Ad.
- 280 A variety passing into the *N. plebecula*, Gould, and closely allied to some of the tall forms of *N. ambigua*, Mtg. Spain, Portugal.

- 281 With the upper parts of the whorls strongly ribbed and the lower half striated.
- 282 Showing an affinity with the small forms of *N. antillarum*, Phil., and *N. vibex*, Say.
- 283 Short, broad, of a dark red-brown colour, with darker transverse thread-like lines.
- 284 Body-whorl smooth, ribs continuous; *N. fuscolineata*, Smith. Ann. and Mag. Nat. Hist., 1875, p. 323-4. Cape Sima.
- 285 *Pusiola*, D'k'r. Vitti Islands.
- 286 *Propinqua*, J. Sow. (Crag.), granular variety.
= *semistriata*, Brocchi; semistriated variety.
- 287 Elongated, pale, with pale rufous bands, *N. trifasciata*, A. Ad.
- 288 Closely striated all over the shell. Vigo Bay.
- 289 Granular; this is the recent form of the *N. propinqua*, J. Sow., from the Crag.
- 290 Longitudinally ribbed and transversely grooved.
- 291 Narrower and more elongated.
- 291A More fusiform than the figure in Brocchi's work. This is the common form. Vigo Bay.
- 291B Broadly ovate, semistriated.
- 292 Short and broad, equally grooved throughout, grooves distant.
- 293 Not more than a quarter of an inch long, ribbed and cancellated, similar to some of the varieties of *N. marginulata*, Lam.
- 294 Intermediate between the genus *Nassa* and *Bullia*.
- 295 *Vincta*, Marr. Pamphlet, p. 12, is a large elongated form, three banded, showing the passage of these shells into the pale varieties of *N. sequijorensis*, A. Ad.
- 296 Narrow and elongated, closely allied to the *N. planicostata*, A. Ad.
- 297 Narrow and elongated, closely allied to the *N. corniculum*, Olivi.
- 298 Allied to some of the brown varieties of *N. pauperata*, Lam.
- 299 A small beautifully variegated variety. Keeling's Islands.
- 300 Resembling the West African shell, the *N. sesarma*, Marr.
- 301 Small, elongated.
- 302 Small, very thick, noduled; is the *N. pumilio*, Smith.
Whydah, W. Africa.
- 303 Narrow and elongated. Malta.

- 304 Closely allied to the last; is the *N. Æthiopica*, Marr. Pamphlet, p. 13. Kabenda, W. Africa.
- 305 Elongated, apex sharp.
- 306 Broader and much more tapering than the last; is the *N. candei*, D'Orb. Cuba, pl. 23, f. 1-6. Cuba.
- 307 Rubra, Poties and Michaud. Gall. des Moll., p. 381, pl. 32, f. 17, 18. Seas of Europe.
- 308 Very small, whorls very round, aperture round. Malta.
- 309 Compacta, Angas. P.Z.S., 1865, p. 154. St. Vincent's Gulf, Australia.
- 310 Minor, Marr. Pamphlet, p. 14. Kabenda, West Africa.
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- 311 *Tænia*, Gmel.; the smooth form. Reeve, pl. 3, f. 19. Philippines. =olivacea, Brug.
- 312 Smooth, rounded below the sutures, intermediate between the last and *N. canaliculata*, Lam. New Guinea.
- 313 Larger, with the whorls more regularly tapering than the last, olivaceous with irregular transverse bands. Gault, pl. 44, f. D.
- 314 With broad ribs. Kien., pl. 15, f. 53.
- 315 Smaller, with the ribs more regularly defined; is the *N. approximata*, Pease.
- 316 With close smooth ribs.
- 317 Much smaller.
- 318 Passing into the *N. nodifera*, Powis. It is impossible to say where the *N. tænia* ends and *N. canaliculata*, *N. nodifera* and *N. trifasciata* begin.
- 319 Cancellated. Quoy and Gaim., "Voy. de l' Astrolabe," pl. 32, f. 13-15. New Guinea.
- 320 Smaller, passing into the *N. margaritifera*, D'k'r.
- 321 Small, polished, ribs slightly raised, passing into the *N. Kieneri*, Anton. and *N. coronata*, Brug.
- 322 A small cancellated variety, shows a close affinity with the *N. reticulata*, Linn. New Guinea.
- 323 *Elegans*, Reeve (not Kien.!) pl. 2, f. 10. [Brug.
- 324 Smooth, coronated at the sutures, passing into the *N. coronata*,
- 325 Tumid and cancellated, but not coronated below the sutures. Marrat's Pamphlet, pl. 1, f. 12.
- 326 Tumid below the sutures, very large, nearly two inches long. This shell occupies a position so intermediate between *N. tænia* and *canaliculata* that it might with equal propriety be placed with either of them.

- 326A Passing into the *N. nodifera*, Powis.
- 327 Smooth, polished, oblong, passing into the *N. oblonga*, Marr.
- 328 " more elongated, coronated at the sutures, all the whorls except the body-whorl costate.
- 329 Intermediate between *N. taenia*, Gmel., and *nodifera*, Powis.
- 330 " " and *margaritifera*, D'k'r.
- 331 " " and *margaritifera*, Reeve (not D'k'r.!)
- 332 " " and *coronata*, Brug.
- 333 *Coronata*, Brug. Reeve, pl. 3, f. 20. Reeve, Madagascar.
- 334 Spire elongated, callous very thick, shell heavy, deformed. A very interesting form.
- 335 With a double callosity and a double lip, deformed.
- 336 Very large, with an external central white band, and three in the interior of the shell.
- 337 With the upper whorls cancellated and the body-whorl plain.
- 338 Smooth and polished, scarcely coronated.
- 339 Large, very broad, semicostate, white, callous thin, the lip has folds behind it.
- 340 With strong ribs behind the thickened lip.
- 341 Smooth at the sutures, resembling varieties of *N. mutabilis*, Linn.
- 342 With the ribs placed at a distance from the outer lip.
- 343 Ribs short and strong.
- 344 Ribbed half way down the shell.
- 345 *Bullata*, Marr. Pamphlet, p. 5. Quoy and Gaim., "Voy. of the Astr.," pl. 32, f. 5-7. New Guinea.
- 346 Regularly costate, coronated at the sutures.
- 347 Intermediate between the *N. coronata*, Brug., *N. Kieneri*, Anton., and *N. nodifera*, Powis.
- 348 *Marmorata*, Anton. Verz. der Conch., p. 92, No. 2966. S. Archer, Singapore.
- 349 *Marmorea*, A. Ad. P.Z.S., 1851, p. 106. Reeve, pl. 1. f. 7. Philippines.
- 350 Marbled, but not banded. Dr. Collingwood, Borneo.
- 351 Tumidly coronated. Ditto.
- 352 With denticles in front of the lip.
- 353 *Kieneri*, Anton. Verz. der Conch., p. 92, No. 2965.
= *lurida*, Gould. = *dispar*, A. Ad. New Guinea.

- 354 Turreted, very elongated. A deformity similar to the *N. distorta* and *stolida*, A. Ad.
- 355 Coronated, passing into the variety with small spots of *N. coronata*, Brug.
- 356 With white flames, exactly like those on the shells of *N. coronata*, Brug.
- 357 Passing into the *N. bicallosa*, Smith.
- 358 *Bicallosa*, Smith. Linn. Soc. Journ. Zool., vol. 12, pl. 30, f. 1. Swan River and Cape Natal.
- 359 Passing into the *N. mutabilis*, Linn.
- 360 With a thick round callous in front.
- 361 Passing into *N. mucronata*, A. Ad.
- 362 Between Kieneri, *coronata* and *tænia*.
- 363 „ and *gaudiosa*, Hinds.
- 364 „ and *bicallosa*, Smith.
- 365 *Mutabilis*, Linn. Reeve, pl. 1, f. 6. Mediterranean.
- 366 Covered with a silky epidermis. Taylor Collection.
- 367 *Ebenacea*, Gemari.
- 368 *Pfeifferi*, Phil., is transversely striated and interruptedly lined. Spain.
- 369 Elongated, narrow, and rather thick.
- 370 Small, about half an inch long, white, streaked with pale rufous-brown.
- 371 Two lines long, pale, almost white, lip thickened.
- 372 Tumidly coronated.
- 373 White, sutural edge somewhat angular, closely allied to the *N. spirata*, A. Ad.
- 374 Grey-brown.
- 375 White, with very faint markings.
- 376 With the upper whorls cancellated, spotted like the *N. spirata*, A. Ad. Singapore.
- 377 Between *N. mutabilis*, Linn., and *N. marginulata*, Lam.; granules at the sutures numerous.
- 378 Upper whorls and below the suture on the last or body-whorl deeply grooved transversely.
- 379 Brown spotted, flamed and banded with brown.
- 380 With strong varices.
- 381 With the ribs near the centre of the whorls.

- 382 *Foliosum*, Wood's Index, pl. 22, f. 39. Amboyna.
- 383 *Algida*, Reeve, pl. 22, f. 145. Moreton Bay, Australia.
- 384 Intermediate between the last and the *N. elegans*, Kien. (name pre-occupied).
- 385 Intermediate between the *N. elegans*, Kien., and *N. lævigata*, Marr.
- 386 Ferruginous brown, resembling the varieties of *N. picta*, D'k'r.
- 387 Resembling the *N. foliosum*, Wood, but spotted at the sutures.
- 388 *Mutabilis*, Wood, pl. 22, f. 47. Capt. Cawne Warren, Ceylon.
- 389 *Bucculenta*, Marr. (See description.)
- 390 Between *N. compta*, A. Ad., and *N. elegans*, Kien. Mauritius.
- 391 Between *N. mutabilis*, Linn., and *marmorata*, Anton.
- 392 Between *N. mutabilis*, Linn., and *N. nodifera*, Powis.
- 393 *Nitidula*, Linn. Chem., pl. 125, f. 1194-5. = *Canaliculata*, Lam.
- 394 Canal wide, shell rufous brown, almost smooth.
- 395 Canal partly open.
- 396 Canal closed, drab, with a brown-rufous stain on the back.
- 397 Canal closed, drab, with a brown-rufous stain, coronated at the sutures.
- 398 The upper whorls are costate, the body-whorl almost smooth, lip spiny.
- 399 Drab, with two brown bands, lip without spines.
- 400 Drab, with a single brown spot, suture plain, lip slightly crenated.
- 401 Shell smooth, passing into the *N. trifasciata*, Gmel.
- 402 Ash-grey, noduled at the sutures, strongly ribbed behind the lip, passing into the *N. nodifera*, Powis.
- 403 Ash-grey, noduled at the sutures, passing into the *N. marginulata*, Lam., and *N. nodifera*, Powis.
- 404 About half the size of the *N. canaliculata*, Lam., as figured in Reeve, finely plicated throughout. "Challenger" Ex.
- 405 Smaller than the last, smooth and glossy; closely allied to the *N. lævigata*, Marr.
- 406 Smooth and glossy; the ribs are but slightly developed in this variety.
- 407 Semi-cancellated. Reeve, pl. 3, f. 18. Philippines.
- 408 Closely cancellated, resembling the shell figured in Kien., pl. 14, f. 49, as *N. crenulata*, Brug., but broader.
Indian Seas.

- 409 Canal slightly open. Mart. and Chem., ed. 2, pl. 7, f. 8-9.
- 410 Smooth, whorls round, ventricose.
- 411 *Lævis*, H. and A. Ad. (not Chem.!) Recent Mollusca, vol. 3, pl. 12, f. 7.
- 412 *Trifasciata*, Gmel., p. 3489. Gault. Test., pl. 44, f. A.
 =*rutilans*, Reeve. New Holland.
 =*unicolora*, Kien.
- 413 Broad, smooth, glossy; evidently the smooth form of *N. canaliculata*, Lam., and *N. nodifera*, Powis.
- 414 *Unicolorata*, Reeve, pl. 3, f. 17. Shell of a bluish ash colour.
 Jukes, N. Australia.
- 415 *Unicolora*, Kien., pl. 19, f. 69. Shell ashy-grey, narrow in form.
- 416 Ash, olive and grey; is the *N. rutilans*, Reeve, pl. 22, f. 147.
 New Zealand.
- 417 Of a rufous-brown colour.
- 418 With three internal brown bands. (Hence the name *trifasciata*.)
- 419 Elongately oblong, very fine.
- 420 Smaller and narrower, of a dark red-brown colour.
- 421 White.
- 422 Ash-grey, with two brown bands.
- 423 Orange, with ditto.
- 424 Oblong-ovate, pale in colour.
- 425 Resembling in form the *N. sequijorensis*, A. Ad. (I have no doubt of this being the smooth form of the shell named.)
- 426 Of a dark purple colour, both externally and internally.
- 427 Small, almost fusiform, showing its close affinity to *N. micans*, A. Ad.
- 428 *Monile*, Kien., pl. 11, f. 40. Pale, ribs smooth. Philippines.
- 429 Slate coloured, with darker bands. Reeve, pl. 6, f. 38.
- 430 Ash-grey, with darker bands.
- 431 Lip having sharp denticles on its edge.
- 432 „ without denticles.
- 433 Ribs strong, curved.
- 434 „ almost obsolete.
- 435 A distorted variety; is the *N. distorta*, A. Ad. Reeve, pl. 5, f. 32.
- 436 Another shell, the *N. lachrymosa*, Reeve, pl. 8, f. 52, is a smooth form.

- 437 One of the Australian varieties; has been named *N. Jacksoniana*, Kien., pl. 19, f. 73.
- 438 Lined on the back of the lip, and otherwise very like varieties of *N. picta*, D'k'r.
- 439 A variety very closely approaching some of the shells of *N. coronata*, Brug.
- 440 Approaching forms of *N. nodifera*, Powis.
- 441 Closely allied to the *N. mucronata*, A. Ad. Shark's Bay.
- 442 Resembling in form and ribbing the *N. costata*, A. Ad.
- 443 Shell narrow, passing into the *N. velata*, Gould. Australia.
- 444 *Nodifera*, Powis. Reeve, pl. 4, f. 23. Panama.
- 445 Taller and more deeply canaliculate; colour pale purplish-brown and buff. New Guinea.
- 446 A large variety is figured in Gault. Test., at pl. 44, f. D.
- 447 Reddish-brown, as if iron-stained, callous expanded and thickened, closely resembling varieties of *N. hirta*, Kien.
- 448 Ash-grey, ribs close, sutures distinctly coronated, sulci between the ribs distant, callous almost obsolete.
- 449 Shell elongately ovate, callous defined, columella strongly plicate, on the front of the shell, the ribs are close and numerous.
- 450 Short, broad and rounded, banded with brown and white.
- 451 Ash-grey, strongly ribbed, carinated at the base, the inside is deep purple. New Guinea.
- 452 Resembling *N. gemmulata*, Lam., in form, ribs gracefully curved; the lower part of the body-whorl is closely granular. This shell combines the characters of the *N. gemmulata*, Lam., *N. marginulata*, Lam., *N. nodifera*, Powis, and *N. costata*, A. Ad.
- 453 With the upper whorls cancellated and the body-whorl strongly ribbed.
- 454 Shell passing into varieties of *N. sequijorensis*, A. Ad.
- 455 Ribs strong on each side of the shell, smooth in the centre, closely resembling a similar variety mentioned under the head of *N. tænia*, Gmel.
- 456 Shell coronated, ribbed in front, smooth at the back.
- 457 Ribs broad, shell cancellariform.
- 458 Elongated, strongly ribbed and coronated. S. Archer, Singapore.
- 459 Pale buff, almost white, with two broad pale ash bands, ribbed and coronated.

- 460 Interstices grooved, with two internal white bands on a brown ground. A beauty.
- 461 An elongated, strongly cancellated shell, resembling *N. marginulata*, Lam., passing into *N. scalaris*, A. Ad.
- 462 Smaller, ribs wider apart, scarcely cancellated, callous spreading.
- 463 *Margaritifera*, Reeve, pl. 9, f. 59, (not Dkr.!) .
- 464 With the lip prickly in front with denticles.
- 465 A variety with the cancellation very fine, the transverse and longitudinal lines being hair-like, callous none.
- 466 Shell small, ribs distant, banded with brown and white.
Ceylon.
- 467 Somewhat humpbacked, cancellated, callous covering the whole front of the shell. It came with the *N. thesites*, Brug., and is a cancellated variety of it. It is also the *N. marginulata*, Kien., pl. 29, f. 117.
- 468 Has smooth ribs, and resembles in form and colour the *N. nivea*,
A. Ad.
- 469 Somewhat elongated, smaller than the last, ribs broad, resembling the *N. Fontanei*, D'Orb.
- 470 Ovate in form, approaching the *N. oblonga*, Marr.
- 471 Oblonga, Marr. Pamphlet, p. 5.
- 472 Shell fusiform.
- 473 *Australis*, A. Ad. P. Z. S., 1851, p. 272. Australia.
- 474 Intermediate between the last and *N. livescens*, Phil.
S. Archer, Singapore.
- 475 Narrow, with the longitudinal and transverse lines very fine.
- 476 *Livescens*, Phil. Zeit. f. Malak, 1848, p. 135. Philippines.
- 477 Ribs broad, wide apart.
- 478 *Hepatica*, Pult. Wood's Index, pl. 22, f. 42.
- 479 Intermediate between *N. livescens*, Phil., and *N. margaritifera*.
Reeve.
- 480 Shell deformed, having a thick piece of shelly matter cemented to the inner edge of the lip.
- 481 Between *N. marginulata*, Lam., and *N. Australis*, A. Ad.
- 482 Ribs wide apart, beaded at the sutures, smaller and broader than any of the foregoing varieties.
- 483 Shell smaller than the last, passing into the *N. cælata*, A. Ad.
S. Archer, Singapore.

- 484 Broad, short, ribs very broad; this shell has the texture and is the colour of varieties of *N. reticulata*, Linn.
- 485 Having the granules formed by the transverse and longitudinal lines square.
- 486 Elongated, cancellation fine, approaching in colour, form and texture the *N. sequijorensis*, A. Ad.
- 487 In this variety the upper whorls are finely cancellated, and the body-whorl is coarsely granular.
- 488 Shell small, resembling in form, size and cancellation the *N. cælata*, A. Ad., but is grooved below the suture.
Philippines.
- 489 Resembling the *N. fasciata*, Lam., in colour, but is broader.
- 490 Nodules at the sutures large, showing an affinity with *N. arcularia*, Linn., var. *pulla*.
- 491 With the ribs continuous, scarcely grooved below the sutures.
- 492 Ribs broad, slightly raised, sutural granules white, interspaces red-brown.
- 493 Ribs close, coronation distinct, resembling a large *N. costata*, A. Ad.
- 494 Resembling No. 452, but more elongated and narrower.
- 495 Small, hump-backed, combining the characters of *N. globosa*, Q. and G., *N. thersites*, Brug., and *N. marginulata*, Lam.
- 496 More elongated than the last, passing into the *N. leptospira*, A. Ad.
- 497 Almost smooth, smoke-brown, callous thick, divided into two parts.
- 498 With the last whorl smooth behind the lip, resembling *N. stolata*, Gmel.
- 499 Semicostate, having the ribs only half their usual length.
- 500 „ „ elongated, polished, Gault. Test., pl. 43, f. P.
- 501 Smooth, highly polished, more or less coronated at the sutures.
- 502 In this shell the tubercles are elongated, forming short ribs.
- 503 Smooth, polished, without any sign of tubercles at the sutures, *N. lævigata*, Marr.
- 504 A variety of the last, with tubercles at the sutures. Marrat's Pamphlet, pl. 1, f. 7.
- 505 A variety of the last, with the tubercles elongated, semicostate.
- 506 Resembling No. 452 in form, but differs from that shell in being cancellated.

- 507 With irregular squares, formed by the transverse and longitudinal lines.
- 508 Whorls round, thick, resembling the *N. hispida*, A. Ad.
- 509 Is broader and more elongated than the last, resembling varieties of the *N. reticosa*, A. Ad. (Name pre-occupied by J. Sow.)
- 510 A variety closely allied to the *N. splendidula*, D'k'r., in both form and sculpture.
- 511 A variety in size and marking similar to the small *N. gemmulifera*, A. Ad.
- 512 Is an elongated, coronated shell, combining the character of five others—viz., *N. elegans*, Kein. (name pre-occupied by J. Sow., Min. Conch.), *N. lævigata*, Marr., *N. coronata*, Brug., *N. trifasciata*, Gmel., and *N. nodifera*, Powis.
- 513 Shell pale, ribs distant, smooth, closely allied to the *N. bifaria*, Baird.
- 514 Shell pale, ribs broad, glossy; between the *N. bifaria*, Baird, and *N. costata*, A. Ad.
- 515 *Bifaria*, Baird. New Caledonia.
- 516 With more numerous plicæ developed towards the base. Andaman Islands.
- 517 White, with two brown bands, ribs distant, very thin, the groove-line is close below the suture instead of distant from it.
- 518 Ribs smooth, whorls turreted, passing into the *N. clara*, Marr.
- 519 *Labida*, Reeve, pl. 27, f. 179.
- 520 *Multicostata*, A. Ad. P.Z.S., 1851, p. 98. Reeve, pl. 20, f. 136. Philippines.
- 521 Shell cream-coloured, with a central brown band, fusiform; is the *N. pulcherrima*, Marr. Pamphlet, p. 10, pl. 1, f. 15. New Holland.
- 522 Narrow and elongated, between narrow forms of *N. nodifera*, Powis, and *N. planicostata*, A. Ad.
- 523 *Planicostata*, A. Ad. P.Z.S., 1851, p. 108. Reeve, pl. 12, f. 76. Payta, Peru.
- 524 „ with much stronger ribs, pl. 14, f. 94.
- 525 *Micans*, A. Ad. P.Z.S., 1851, p. 106. Reeve, pl. 21, f. 140. Philippines.
- 526 Very narrow and elongated; *N. terebroides*, Reeve, pl. 24, f. 161. = *costata*, A. Ad. (name pre-occupied.)
- 527 *Multilineata*, Marr. Pamphlet, p. 11. South America.

- 528 Sparta, Mar. Pamphlet, p. 11, pl. 1, f. 22.
- 529 Anthracina, Garrett, Proc. Acad. Nat. Sci., Philad., 1873,
p. 229, pl. 3, f. 57. Viti Islands.
- 530 Pupinoides, Reeve, pl. 24, f. 162. Philippines.
- 531 Marginulata, Reeve, pl. 7, f. 43. (Not Lamarek !)
- 532 „ „ pl. 8, f. 50. S. Archer, Singapore.
- 533 „ „ pl. 8, f. 51.
- 534 Marginulata, Lam. Kien. pl. 29, f. 117.
- 535 Closely allied to the last; is the *N. venusta*, D'k'r. Phil.
Abbild., pl. 2, f. 1. Island of Bali, Indian Ocean.
- 536 Closely allied to the last; is the *N. venusta*, D'k'r. Reeve,
pl. 7, f. 44. Philippines.
- 537 Ribs broader and wider apart than either of the two last-
named shells.
- 538 Yellow, banded with blackish-brown fillets, similar to
N. sturmii, Phil. Reeve, pl. 22, f. 148. Mozambique.
- 539 Shell smaller and paler, ribs more distant.
- 540 Ribs few, broad and noduled; is the *N. sturmii*, Phil. Abbild.
pl. 1, f. 1.
- 541 With the ribs almost obsolete, passing into the next.
- 542 Shell broad and short; is the *N. crassa*, Koch. Phil. Abbild.
pl. 1, f. 4. China.
- 543 White.
- 544 *Crassa* in form, and *sturmii* in sculpture.
- 545 „ and *venusta* in sculpture.
- 546 A variety with the ribs acute; is the *N. acuticostata*, Montrous.
Jour. de Conch., 1864, pl. 10, f. 8. Caledonian Archipelago.
- 547 Is almost smooth.
- 548 *Plicosa*, D'k'r. Zeit., f. Malak, 1846. Algoa Bay, West Africa.
=*speciosa*, A. Ad. P.Z.S., 1851, p. 100. Reeve, pl. 3, f. 16.
- 549 Upper whorls closely cancellated and the body-whorl smooth.
Marrat's Pamphlet, pl. 1, f. 11. Algoa Bay.
- 550 An elongated shell, costate and strongly grooved.
S. Archer, Singapore.
- 558 Narrow and elongated, passing into varieties of *N. sequi-*
jorensis, A. Ad.
- 552 *Oriens*, Marr. China Seas.
=*elongata*, Marr., Pamphlet, p. 4 (the name pre-occupied
by J. Sow., Min. Conch.)

- 553 Smooth, costate, passing into the *N. crassicostata*, Marr.
- 554 *Crassicostata*, Marr. (See description, not the Pamphlet, p. 6).
Bombay.
- 555 Smaller and more oblong than the last; is closely allied to the
N. costata, A. Ad.
- 556 *Costata*, A. Ad. P.Z.S., 1851, p. 98. Reeve, pl. 21, f. 142.
Philippines.
- 557 A variety resembling the *N. nodicostata*, A. Ad., but with
smooth ribs.
- 558 *Obesa*, Neville. Jour. Asiat. Soc., p. 95, pl. 8, f. 2, 3. Bombay.
var. *Ceylonica*. Ceylon and Penang.
- 559 Similar to the last in form, but having the ribs carried to the
base. S. Archer, Singapore.
- 560 *Bifaria*, Baird. "Cruise of the Curacao" (Brenchly), 1873, p. 436,
pl. 38, f. 1, 2. Andaman Islands.
- 561 With longer ribs, showing a variation towards the *N. pauperata*,
Lam.
- 562 *Bella*, Marr. Pamphlet, p. 9, has the ribs granular.
- 563 With a broad, button-like callous in front. *N. præcallosa*,
Marr. Pamphlet, p. 11.
- 564 *Concentrica*, Marr. (as *concinna*, Powis). Reeve, pl. 13, f. 82.
Philippines.
- 565 *Wilsoni*, Reeve, pl. 24, f. 158. (Not C. B. Adams.) The
N. Wilsoni, C. B. Ad., is a variety of the *N. complanata*,
Powis.
- 566 Between the *N. concinna*, Powis, and the next.
- 567 *Smithi*, Marr. Quart. Jour. Conch., Leeds, p. 187. Pamphlet,
p. 7.
- 568 Between *N. cribraria* and *concentrica*, Marr.
- 569 *Cribraria*, Marr. Pamphlet, p. 12.
- 570 *Abyssinica*, Marr. „ p. 8. Abyssinia.
- 571 *Grata*, Marr. (See description).
- 572 Larger and broader than the shell described.
- 573 Taller and narrower than the last, whorls granular.
- 574 Small, reddish-brown, with a central, pale band.
- 575 Taller and narrower than the last, with the reticulation very fine.
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- 576 *Arcularia*, Linn. Reeve, pl. 4, f. 25*b*. Philippines.
- 577 White, glossy, body-whorl smooth in the centre, ribbed on each
side.

- 578 Similar in form to the last, but cross-grooved, callous expanded.
- 579 Smooth, polished, strongly ribbed throughout, without the nodules at the sutures; is the *N. plicosa*, Bolton.
- 580 Strongly ribbed, but with very few cross-grooves, pure white inside and out.
- 581 Ashy-grey, spotted between the nodules. South Africa.
- 582 Darker in colour than the last, spots very pale.
- 583 Two-banded externally and three in the interior.
- 584 With a single external band and three inside.
- 585 Pale buff, with a broadly-expanded callous, like the *Helmet Conch*.
- 586 Yellow, tumid, double banded, sutures tumidly plicated, showing a tendency to run into the *N. coronata*, Brug.
- 587 Rufous-brown, the interior is brown with a central, narrow, white band.
- 588 Large, nodules prominent, olive-green. Reeve, pl. 4, f. 25*a*, callous much less expanded than is usual in these shells.
- 589 Callous less expanded, showing a close affinity with the *N. marginulata*, Lam.
- 590 A variety with an expanded callous; is figured in Kiener at pl. 28, f. 115.
- 591 Another variety with the cross-grooves interrupted; is figured in Mart. and Chem., ed. 2, pl. 4, f. 19, 20.
- 592 Ribs few and distant, shell white; is figured in Mart. and Chem., ed. 2, pl. 4, f. 21.
- 593 Pulla, Reeve, pl. 4, f. 22. Linnæus. (?) A cancellated variety of *N. arcularia*, Linn. Philippines.
- 594 White, with a central brown band and another of a darker colour below the sutures.
- 595 *Crenulata*, Brug. Ency. Meth., pl. 394, f. 6, exclusive of all synonyms.
- 596 Of a cream-colour, with very dark spots between the nodules, ribs broad; two of the ribs unite in one tubercle, and this occurs in the three first tubercles behind the lip.
- 597 Ribs very irregular, three of them join in the first tubercle, two and part of a third join at a little distance from the second, the remaining ribs are curiously curved.
- 598 White or very pale, cancellation very close. Red Sea.
- 599 Showing a close affinity with the *N. perlata*, Meuschen.
- 600 " " with the *N. hispida*, A. Ad.

- 601 Showing a close affinity with the varieties of *N. thersites*, Brug.
602 Very short and dumpy.
603 Spire elongated, acute, semicostate; a very curious shell.
604 Shell rather strongly ribbed, with numerous transverse hair-
like grooves.
605 In this variety the upper whorls are closely cancellated, and
the cancellation extends into at least one-half of the body-
whorl, shell young.
606 Dark brown with a central white band.
607 Is small, with a rufous stain on the outer edge of the callous.

- 608 Reticulata, Linn. Reeve, pl. 9, f. 57b. Seas of Europe.
609 Ribs more distant and fewer, f. 57a.
610 " " Kiener, pl. 23, f. 91. Mediterranean.
611 Closely resembling the small forms of *N. tænia*, Gmel. Malta.
612 Dark red-brown, nearly black, ribs broad and irregular, trans-
versely grooved.
613 Dark red-brown, ribs granular, interstices deeply sulcate,
callous yellow.
614 Dark red-brown, ribs smooth, interstices smooth, not grooved
below the sutures; allied to the *N. nodifera*, Powis.
615 Variety *nitida*, Jeffreys, Brit. Conch. Britain.
616 Smaller than the last, ribs wider apart, banded with violet,
brown and white.
617 Narrow, conical, yellowish white.
618 Pale yellowish-white, with a dark-brown band below the
sutures.
619 Broad, ribs very few, distant, body-whorl pale ash-grey, with
interrupted brown transverse bands, having a strong varix.
620 Shell with the spire short and the body-whorl large, passing
into the *N. marginulata*, Lam.
621 A small elongated form, resembling in both colour and marking
the *N. glaberrima*, Chem.
622 Very long and narrow, white, indistinctly violet banded below
the sutures.
623 Ribbed and cancellated, resembling the *N. margaritifera*,
Reeve (not Dunker. !)

- 624 Ribbed and cancellated, resembling the *N. margaritifera*, D'k'r. = *dentifera*, A. Ad.
- 625 Is a very peculiar, short, broad form, with the callous covering the whole front of the body-whorl.
- 626 Grain ribbed, coronated, callous defined.
- 627 Banded with brown and white, with distinct varices.
- 628 Elongated, the ribs are obliquely and gracefully curved.
- 629 With irregular ribs closely packed behind the lip, then they become few and distant.
- 630 Granules very small, leaving an open space below the sutures, similar to the *N. margaritifera*, D'k'r.
- 631 Plicatella, A. Ad. P.Z.S., 1851, p. 111. Reeve, pl. 9, f. 56.
- 632 Intermediate between the last and *N. limata*, Chem.
- 633 Nivea, A. Ad. P.Z.S., 1851, p. 118. Reeve, pl. 18, f. 122.
Philippines.
- 634 Serrata, Brocchi. Sub-App. Foss., pl. 5, f. 4.
South European Seas.
- 635 Costulata, Brocchi ,, pl. 5, f. 9.
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- 636 Scalaris, A. Ad. P.Z.S., 1851, p. 108. Reeve, pl. 4, f. 21.
Philippines.
- 637 Is a smaller, narrower, and more elongated shell than the last.
- 638 Ash-grey, with two dark bands, showing a close affinity with varieties of *N. canaliculata*, Lam.
- 639 Having the ribs only slightly raised, resembling varieties of *N. nodifera*, Powis.
- 640 Resembling the shell figured in Kiener at pl. 14, f. 49, as a variety of the *N. crenulata*, Brug.
- 641 Canal almost closed, shell with two dark-brown bands.
- 642 Intermediate between *N. scalaris*, A. Ad., and *N. canaliculata*, Lam.
- 643 Variety deeply channelled at the suture, lip spiny; is very closely allied to the *N. sequijorensis*, A. Ad.
- 644 Passing into the *N. oriens*, Marr.
- 645 Elongated, spotted at the sutures, semicostate.
S. Archer, Singapore.
- 646 Varicifera, A. Ad. P.Z.S., 1851, pl. 108. Reeve, pl. 18, f. 118.
Eastern Seas.

- 647 A perfect specimen and fully matured ; is much broader, lip much more expanded, than the figure in Reeve ; the columella is almost smooth, callous covering about one-third of the body-whorl ; operculum serrated ; the only mature shell I have seen. China.
- 648 Tall and narrow ; is very closely allied to the tall varieties of *N. sequijorensis*, A. Ad.
- 649 Small, with only one varix, passing into the *N. caelata*, A. Ad.
- 650 Crenulata, Brug. Ency. Meth., pl. 394, f. 6, is certainly a strongly-ribbed and closely-grooved variety of *N. arcularia*, Linn.
- 651 Crenulata, Kien., pl. 14, f. 49, is an ash-coloured shell with two pale bands, ribbed and grooved, lip without spines, and is allied to the *N. sequijorensis*, A. Ad.
- 652 A broader variety, Smith. P.Z.S., 1879, p. 120, pl. 20, f. 48. Japan.
- 653 Very finely cancellated, lip spiny, callous thin, spreading. Yokohama.
- 654 Of a dark, rufous-brown colour, cancellation rather coarse, shell broad and short, lip without spines, callous thick, not spreading. Japan.
- 655 Crenulata, Kien, pl. 23, f. 90, is certainly a variety of *N. nodifera*, Powis.
- 656 Crenulata, Chenu. Man. de Conch., p. 163, f. 169, is another variety of the same shell.
- 657 Crenulata, Reeve, pl. 1, f. 2, is allied to *N. sequijorensis*, A. Ad. Philippines.
- 658 *Sequijorensis*, A. Ad. P.Z.S., 1851, p. 97. Reeve, pl. 8, f. 53. Sequijor, Philippines.
- 659 With very close cancellation, of an ash-grey colour, lip spiny at the base. Japan.
- 660 White, with rufous bands, sutural canal wide open, passing into varieties of *N. scalaris*, A. Ad.
- 661 Intermediate between *N. sequijorensis*, A. Ad., and *N. ravida*, A. Ad.
- 662 Shell broader, ,, ,, and *N. cremata*, Hinds.
- 663 With distant ribs and only one or two transverse grooves.
- 664 Very elongated, resembling some of the varieties of *N. trifasciata*, Gmel.
- 665 Ribs distant, colour red-brown, passing into the varieties of *N. nodifera*, Powis.

- 666 Ravidā, A. Ad. P.Z.S., 1851, p. 97. Reeve, pl. 11, f. 68,
granules square. Philippines.
- 667 Ravidā, A. Ad. P.Z.S., 1851, p. 97, granules round.
- 668 Intermediate between the last and *N. reticosa*, Hinds.
- 669 „ „ and *N. splendidula*, D'k'r.
- 670 Costate, with a few sulci in the interstices.
- 671 Passing into the *N. cælata*, A. Ad.
- 672 „ „ *N. nivosa*, Marr.
- 673 Clathrata. Born. Mus., p. 261, pl. 9, f. 17, 18.
- 674 Corrugata, A. Ad. P.Z.S., 1854, p. 110.
- 675 Shorter and broader; is the *N. gemmulata*, Lam. Reeve, pl. 5,
f. 21. Captain Cawne Warren, Gulf of Manaar, Ceylon.
- 676 Papillæ large; is the *N. verrucosa*, A. Ad. (Not Gmel.!)
- 677 With the tubercles vaulted, so as to become almost spathulate.
Philippines.
- 678 Ribs broad, regular. Kien., pl. 22, f. 84. Kiener, Indian Seas.
- 679 „ few and distant.
- 680 „ numerous and close.
- 681 Intermediate between *N. gemmulata*, Lam., and its variety
N. verrucosa, A. Ad.
- 682 Intermediate between *N. gemmulata*, Lam., and its variety
N. variegata, A. Ad.
- 683 Having a sharp, channeled spire.
- 684 Tubercles raised above the sutures, standing boldly out.
- 685 Smaller, less inflated, having the columelia granosely laminated;
is the *N. Cumingii*, A. Ad. P.Z.S., 1851, p. 98. Reeve,
pl. 5, f. 30. China.
- 686 Variegata, A. Ad. P.Z.S., 1851, p. 97. Reeve, pl. 11, f. 70.
Philippines.
- 687 Intermediate between the last-named shell and the *N. Keenii*,
Marr.
- 688 With small and numerous granules.
- 689 Crispata, Marr. Pamphlet, p. 14. In this shell the longi-
tudinal lines are set upon the whorls almost as close to each
other as it would be possible to place them, and being slightly
raised, they have a crispate appearance.
- 690 Having no callous.
- 691 Stigmāria, A. Ad. P.Z.S., 1851, p. 96-7. Reeve, pl. 7, f. 42.
Philippines.

- 692 Narrower and more elongated than the last. Philippines.
- 693 Smaller in all its parts; is the *N. densigranata*, Reeve, pl. 27, f. 181. Philippines.
- 694 Intermediate between the *N. stigmata*, A. Ad., and *N. splendidula*, D'k'r.
- 695 *Splendidula*, D'k'r. Zeit. f. Malak, 1846, p. 170. Phil. Abbild., pl. 2, f. 16. Borneo.
- 696 White, tessellated with brown. A gem!
- 697 „ banded with rufous brown.
- 698 Elongated, showing an affinity with the *N. Roissyi*, Desh.
- 699 Short and broad, showing a close affinity to the *N. variegata*, A. Ad.
- 700 Small and narrow, approaching such shells as the *N. nivosa*, Marr.
- 701 Conoidale, Desh. Mart. and Chem., 2nd edit., pl. 8, f. 12-13. Island of Sunda.
- 702 Conoidale, Kien., pl. 27, f. 109, bis.
- 703 Intermediate between *N. conoidale*, Desh. and *N. hispida*, A. Ad.
- 704 „ „ „ and *N. albescens*, D'k'r.
- 705 *Hispida*, A. Ad. P.Z.S., 1851, p. 101. Reeve, pl. 6, f. 37 (young). Philippines.
- 706 Large, white, with prickly granules, interior yellow, with three brown bands.
- 707 With obtuse, blunt nodules.
- 708 With sharp nodular keels.
- 709 Coloured as in *N. crenolirata*, A. Ad.
- 710 Tall and elongated.
- 711 Short and broad.
- 712 Banded and dotted with ash-brown.
- 713 Columella strongly plicate.
- 714 „ almost smooth.
- 715 Short, passing into the *N. Gruneri*, D'k'r. (not Reeve!).
- 716 Taller „ *N. splendidula*, D'k'r.
- 717 Callous thick, broad and expanded, passing into the *N. perlata*, Meusch.
- 718 Between the *N. marginulata*, Lam., and *N. hispida*, A. Ad.
- 719 „ *N. albescens*, Phil., and „ „
- 720 With square granules.

- 721 *Nodulosa*, Marr. Pamphlet, p. 4. Ann. and Mag. Nat. Hist., 1873, p. 426 ; granules square, large.
- 722 *Brychia*, Watson, granules in parallelograms. 620 fathoms. Gomera.
- 723 *Gruneri*, D'k'r. (not Reeve !) Zeit. f. Malak., 1846, p. 171. Phil. Abbild., pl. 2, f. 2. Philippines.
- 724 *Albescens*, D'k'r. Zeit. f. Malak., 1846, p. 170. Phil. Abbild., pl. 2, f. 15. East Indies.
- 725 Granules coarser. Reeve, pl. 15, f. 100. Reeve, West Indies.
- 726 Whorls rounder than either of the two last-named shells ; is the *N. bicolor*, Hom. and Jacq.
- 727 *Isabellei*, Reeve (not D'Orb. !), pl. 7, f. 47.
- 728 With large granules ; is a white shell with a blue apex.
Red Sea.
- 729 *Sordida*, A. Ad. P.Z.S., 1851, p. 97. Reeve, pl. 15, f. 96. Philippines.
- 730 Larger than the last, with rounder whorls.
Moreton Bay, Australia.
- 731 Small, cancellation fine, callous spreading.
- 732 Another and still smaller variety ; shows a close affinity with the *N. Wilsoni*, Reeve (not C. B. Ad. !).
- 733 Ribs strong, white, marbled with red-brown, apex brown.
- 734 Taller and more elongated than the last, passing into the smaller varieties of *N. marginulata*, Lam.
- 735 *Gemmulifera*, A. Ad. P.Z.S., 1851, p. 99. Reeve, pl. 20, f. 132. Philippines.
- 736 *Acinosa*, Gould. Pro. Bost. Soc. Nat. Hist., May, 1849.
- 737 *Totombo*, Adans., Sen. Senegal.
- 738 *Turbinea*, Gould. Liberia, West Africa.
- 739 *Keenii*, Marr. Pamphlet, p. 15. Philippines.
- 740 *Persica*, v. Mart.
= *Deshayesiana*, Issel.
- 741 *Webbei*, Petit. Jour. de Conch., 1850. Marrat's Pamphlet, pl. 1, f. 16. West Africa.
- 742 *Ringens*, A. Ad., (Not *Desmoulea* !) Reeve, pl. 29, f. 190 ; is closely allied to the last.
- 743 White variety.
- 744 *Cremata*, Hinds. (Not Reeve !) "Voy. of Sulph.," pl. 9, f. 8, 9, not square grained.

- 745 Smaller, narrower, and more elongated than the last.
Philippines.
- 746 *Cremata*, Reeve, (Not *Hinds*!), pl. 4, f. 26, square grained.
Reeve, Straits of Malacca.
- 747 *Ravida*, A. Ad. P.Z.S., 1854, p. 97. Reeve, pl. 11, f. 68.
Philippines, &c.
- 748 White variety, ,, ,, pl. 11, f. 74.
Philippines, &c.
- 749 *Reticosa*, A. Ad. (Name pre-occupied by J. Sow., Min. Conch).
Apical-whorls brown.
- 750 Between *N. reticosa*, A. Ad. and *N. Roissyi*, Desh. Apical
whorls white.
- 751 Between *N. reticosa*, A. Ad. and *N. ravida*, A. Ad.
- 752 ,, ,, and *sequiorenensis*, A. Ad.
- 753 ,, ,, and *cremata*, *Hinds*.
- 754 ,, ,, and *cælata*, A. Ad.
- 755 ,, ,, *ravida* and *sequiorenensis*, A. Ad.
- 756 Broader than *N. ravida*, A. Ad., and without a callous.
- 757 Narrower and more elongated than *N. ravida*, A. Ad.
- 758 Red-brown, with two darker bands, much smaller than
N. ravida, A. Ad. There are four of these shells, all
differing in form.
- 759 *Sinensis*, Marr. Pamphlet, p. 4. Capt. Denecke, Chinese Seas.
- 760 Short, broad, about one-half the size of *N. ravida*, A. Ad.,
with large granules.
- 761 *Cælata*, A. Ad. P.Z.S., 1851, p. 97. Reeve, pl. 20, f. 133.
Philippines.
- I cannot regard the character of the elongated granules as
being of any importance, scarcely any two of the shells
otherwise identical with it have the line below the sutures
equidistant from the sutural nodules.
- 762 Shell broader than the last, ribs sharply defined, rather distant,
white, with a fine brown central line and a broad brown band
near the suture.
- 763 Yellow, with two pale bands.
- 764 *Clara*, Marr. Pamphlet, p. 7; is white, with two pale brown
bands, and is deeply grooved between the ribs.
- 765 Smaller and narrower than the last; *N. rugosa*, Marr.
Pamphlet, p. 5.

- 766 Intermediate between the *N. cælata*, A. Ad., and small varieties of *N. marginulata*, Lam.
- 767 A small, dumpy form, passing into the *N. globosa*, Quoy and Gaim.
- 768 *Lactea*, Marr. (See description), is thin, white, with a turreted spire, evidently one of the deep water shells.
- 769 Narrow varieties pass into the *N. livescens*, Phil., small forms.
- 770 Passing into the *N. Australis*, A. Ad.
- 771 Smaller, thicker, and more turreted, passing into the *N. rugosa*, Marr.
- 772 *Spilus*, Watson. (Shells of the "Challenger" Ex). 155 fath.
A thin, hyaline shell. Rain Island, Torris Straits.
- 773 *Crenellifera*, A. Ad. P.Z.S., 1851, p. 99. Reeve, pl. 8, f. 49.
- 774 *Sprela*, Watson. (Shells of the "Challenger" Ex.) 12-20 fath.
Amboyna.
- 775 A small, cancellated, greyish-white shell. *N. pusilla*, Marr. (See description). Surgeon-Major S. Archer, Singapore.
- 776 Shell about a quarter of an inch long, between the small varieties of *N. cremata*, Hinds, and *N. abyssicola*, A. Ad.
- 777 *Abyssicola*, A. Ad. P.Z.S., 1851, p. 100. Reeve, pl. 26, f. 175. Philippines.
- 778 *Granulosa*, Marr. (See description.) A beauty. Taylor Collection. Philippines.
- 779 Like the *N. cremata*, Hinds, but having the longitudinal lines very fine and raised.
- 780 *Sequijorensis*, A. Ad., the cancellated form. Reeve, pl. 8, f. 53. Philippines.
- 781 Closely ribbed, with a few grooves between the ribs.
- 782 Very closely ribbed and cross-grooved.
- 783 Dark rufous-brown, whorls rounded.
- 784 Of a cream colour, with three pale rufous bands, sutures deeply channeled, passing into the variety *N. trifasciata*, A. Ad.
- 785 Similar to the last, but having the suture almost closed.
- 786 Resembling the two last, but very elongated.
- 787 With smooth ribs.
- 788 Broader, passing into the *N. nodifera*, Powis.
- 789 *Nivosa*, Marr. Pamphlet, p. 9. White, cancellated, coronated at the sutures.
- 790 Transversely spirally grooved; is the *N. insculpta*, Carptr. 40 fath. California.

- 791 *Fissilabris*, A. Ad. P.Z.S., 1851, p. 99. Reeve, pl. 21, f. 138.
Philippines.
- 792 *Glauca*, C. B. Ad. Panama Shells, p. 61. Reeve, pl. 21, f. 139.
Panama.
- 793 *Parva*, Marr. (See description.) Australia.
- 794 *Albipunctata*, Reeve, pl. 21, f. 144.
- 795 *Roissyi*, Desh. Kien., pl. 21, f. 82. Another specimen,
with the operculum crenated on the side next the labrum has
just been received from Surgeon-Major S. Archer, Singapore.
- 796 *Pauperata*, Lam. Vol. 10, p. 183. Reeve, pl. 5, f. 27.
Australia.
- 797 White.
- 798 Brown.
- 799 „ with two darker brown bands.
- 800 Yellow, with a central brown band.
- 801 Ribs smooth, with a few scattered sulci in the interstices.
- 802 Strongly grain-ribbed.
- 803 Semicostate.
- 804 Narrow, passing into the *N. Gayi*, Kien.
- 805 „ passing by imperceptible gradations into the *N. semi-*
granosa, D'k'r.
- 806 Large, passing into the *N. dentifera*, Powis.
- 807 Strongly coronated, passing into the *N. marginulata*, Lam.
- 808 Resembling in form the *Cyllene lyrata*.
- 809 *Gayi*, Kien., pl. 21, f. 79. Reeve, pl. 13, f. 87.
= *rubritincta*, Gould. Capt. Whiteway, near Valparaiso.
- 810 Inner lip smooth, operculum plain.
- 811 „ grooved, operculum crenated.
- 812 Shell dark purple-brown, operculum serrated; *N. lilacina*, Gould.
- 813 White, dotted with red-brown.
- 814 Tall and elongated, almost smooth.
- 815 Short and broad, passing into the *N. Woodwardi* of Authors
(Not Forbes).
- 816 Passing into the *N. pauperata*, Lam.
- 817 „ *N. incrassata*, Müll.
- 818 Coronated at the sutures, showing an affinity with *N. fasciata*,
Lam.
- 819 Whorls rounder than is usual, white, slightly stained with pale
brown, ribs very oblique.

- 820 *Tæniolata*, Phil. Captain Whiteway, Valparaiso.
=Woodwardi of Authors. (Not Forbes).
- 821 White, with two brown bands.
- 822 White, covered with a pale grey epidermis.
- 823 Passing into the small granular forms of *N. pauperata*, Lam.
- 824 „ „ „ *N. Gayi*, Kien.
- 825 Almost smooth, merely exhibiting the lines of growth.
- 826 *Semigranosa*, D'k'r. Zeit. f. Malak., 1846, p. 170.
- 827 *Optata*, Gould. A variety of the above. Sydney Harbour.
- 828 Another slightly deformed shell; is the *N. munieriana*, Crosse.
- 829 Between *N. semigranosa*, D'k'r., and *tæniolata*, Phil. Peru.
- 830 *Reata*, Gould. Proc. Bost. Soc. Nat. Hist., 1860. Loo Choo.
- 831 Red-brown, ribbed longitudinally and grooved transversely;
between *N. semigranosa*, D'k'r., and *N. pauperata*, Lam.
- 832 Grained throughout, passing into *N. pauperata*, Lam.
- 833 Showing a close affinity with the *N. nodicincta*, A. Ad.
- 834 Transparent white, strongly grain-ribbed. Australia.

- 835 *Corrugata*, A. Ad. P.Z.S., 1851, p. 100.
- 836 *Verrucosa*, Gmel., p. 4427. Gault, pl. 43, f. M.
- 837 White, obliquely costate, showing a rather close relationship
with such shells as the *N. clathrata*, Born.
- 838 *Denticulata*, A. Ad. P.Z.S., 1851, p. 110. "There is some
resemblance in the general aspect of this species to young
specimens of the common *Buccinum undatum*."—Reeve.
- 839 *Prismatica*, Brocchi. Sub. App. Foss., pl. 5, f. 7. Recent
and fossil. Mediterranean.
- 840 *Limata*, Chem., pl. 188, f. 1808-9. „
- 841 Narrower and more turreted than the last, of a reddish-brown
colour, spotted with white.
- 842 Strongly ribbed and tumidly noded, with rufous spots
between the nodules.
- 843 Resembling the *N. conferta*, Martens.
- 844 *Scalariformis*, Valenc. Kien., pl. 21, f. 80.
Kiener, Indian Ocean.
- 845 Resembling the variety of *N. gaudiosa*, Reeve, pl. 13, f. 85.
- 846 Between the *N. limata*, Chem., and *N. versicolor*, C. B. Ad.

- 847 *Plicatella*, A. Ad. P.Z.S., 1851, p. 111. Reeve, pl. 9, f. 56.
- 848 A shell embracing the characters of the *N. prismatica*, Brocc., *N. nivea*, A. Ad., and *plicatella*.
- 849 *Perpinguis*, Hinds, granules fine and close, as in the figure "Voy. of the Sulph.," pl. 9, f. 12-13. California.
- 850 Broad, whorls round, shell much shorter than the last; very like the figure in Chemnitz, pl. 124, f. 1164.
- 851 Coarsely granular, resembling a large *N. trivittata*, Say.
- 852 *Pyramidalis*, A. Ad. P.Z.S., 1851, p. 113. Reeve, pl. 29, f. 191. The shell from which Reeve's figure is taken is a much worn and bad specimen. It is very like a small specimen of *Buccinum undatum*, Linn.; var. *glaciale*; beautifully variegated. Port Elizabeth, Africa.
- 853 White, with a few broad distant ribs; the upper whorls are cancellated, the body-whorl is slightly striated transversely. Labelled, Mediterranean.
- 854 *Picturata*, Marr. (See description.) Taylor Collection.
- 855 *Proxima*, C. B. Ad. Panama Shells. Ann. and Lyc. New York. Panama.
- 856 *Versicolor*, C. B. Ad. „ p. 66. Panama.
- 857 A little more elongated; is the *N. rufocincta*, A. Ad. P.Z.S., 1851, p. 106. Reeve, pl. 17, f. 112. Dyson, Honduras.
- 858 *Lucida*, Marr. Ann. and Mag. Nat. Hist., 1874; yellow-brown, with white ribs.
- 859 A semicostate variety.
- 860 With few and distant ribs.
- 861 *Argentea*, Marr. Pamphlet, p. 9. Whydah, West Africa.
- 862 Between *N. versicolor*, C. B. Ad., and *N. Sanctæ-Helenæ*, A. Ad. St. Helena.
- 863 *Sanctæ-Helenæ*, A. Ad. P.Z.S. Reeve, pl. 28, f. 188.
- 864 Intermediate between the last and the following shells—
- 865 *Striata*, Reeve (not C. B. Adams!), pl. 27, f. 177;
- 866 Between *N. versicolor*, C. B. Ad. and *N. sinusigera*, A. Ad.;
- 867 „ *N. sinusigera*, A. Ad., and *fraudulenta*, Marr.
- 868 *Regulare*, Kuster. Mart. and Chem., ed. 2nd, pl. 12, f. 23, 4. Cape of Good Hope.
- 869 *Sculpta*, Marr. (See description.) S. Archer, Natal.
- 870 *Undata*, Marr. Pamphlet, p. 9. Resembles a miniature form of *Buccinum undatum*, Linn.

- 871 Trivittata, Say. Invert. Mass., p. 364, pl. 632.
Brant Point, Halifax, Georgia, etc.
- 872 Gibbsii, Cooper; is an intermediate form between the last and following shells—
Puget Sound.
- 873 Mendica, Gould. Ditto.
- 874 With three rufous bands (hence the name *N. trivittata*) as in fasciata, Lam., and otherwise very like young specimens of it. "Specimens from Nantucket have the inner margin thickly coated to a considerable extent with enamel, while those found near Boston have none."—*Gould*.
- 875 Narrow and more elongated.
- 876 Fasciata, Lam., vol. 10, p. 169. Reeve, pl. 6, f. 40. Australia.
- 877 A large white variety, with large granules.
- 878 Quoy. and Gaim. "Voy. de l'Astr.," pl. 32, f. 18-21.
- 879 Reddish-brown, with pale bands. Port Adelaide.
- 880 Short, broad, pale yellow with a narrow brown band.
- 881 Young, resembling varieties of *N. trivittata*, Say.
- 882 White, with very dark brown bands.
- 883 „ neither spotted nor banded.
- 884 Tubercles on the columella almost obsolete; the inner edge of the lip is plain.
- 885 Columella smooth.
- 886 „ with a single row of nodules.
- 887 „ „ double „
- 888 With somewhat square nodules.
- 889 Banded with red, brown, and white.
- 890 Closely granular, whorls rounded; is the *N. spurca*, Gould.
Proc. Bost. Soc. Nat. Hist., 1860. St. Simon's Bay.
- 891 Intermediate between *N. fasciata*, Lam., and *N. caperata*, Phil.
- 892 Caperata, Phil., Abbild., pl. 2, f. 18. Philippines.
- 893 Passing into the varieties of *N. pauperata*, Lam.
- 894 Deshayesii, Homb. and Jacq.
- 895 Nodulifera, Phil., Abbild., pl. 1, f. 3.
- 896 Whorls more regular and less noded.
- 897 Ribs oblique, resembling the narrow forms of *N. miga*, Adams.
- 898 More elongated, passing into the varieties of the *N. incrassata*, Müll.
- 899 Angulifera, A. Ad. P.Z.S., 1851, p. 109. Galapagos Islands.

- 900 Without the angle. Marrat's Pamphlet, pl. 1, f. 29.
- 901 Similar to the last, but having prominent teeth on the lip; is the *N. acutidentata*, Smith. P.Z.S., 1879, p. 212, pl. 20, f. 46.
- 902 Very closely ribbed and cross-grooved.
- 903 Between *N. angulifera*, A. Ad., and *N. unifasciata*, Peace.
- 904 *Persica*, v. Marten's.
- 905 *Japonica*, A. Ad. P.Z.S., 1851, p. 110. ~ Japan.
= *tenuis*, Smith.
- 906 *Angulata*, Thorpe. China.
- 907 Ribs smooth, interstices very finely striated. Do.
- 908 *Cochinensis*, Thorpe. Do.
- 909 Shell narrow, tall, white, transversely grooved throughout, punctured in the grooves.
- 910 *Echinata*, A. Ad. P.Z.S., 1851, p. 101. Reeve, pl. 20, f. 131.
Philippines.
- 911 Var. Smith. Shorter, with fewer tubercles.
- 912 *Nodicincta*, A. Ad. P.Z.S., 1851, p. 110. Galapagos Islands.
- 913 All the whorls but the last or body-whorl closely striated.
- 914 Ribs smooth.
- 915 Large, ribs strongly developed; this is closely allied to the *N. versicolor*, C. B. Ad.
- 916 With transverse reddish lines occurring at regular intervals, smooth and polished.
- 917 Grooved throughout.
- 918 Brown and white, with a few distant, reddish, transverse lines.
- 919 *Plebecula*, Gould. Japan.
- 920 A variety of the last, with numerous brown lines between the ribs.
- 921 Having the ribs projecting at the sutures.
- 922 *Babylonica*, Watson. Ribs raised into blunt tubercles at the sutures. Philippines.
- 923 Columella without a callous.
- 924 Callous not spreading.
- 925 „ smooth.
- 926 „ spreading, rugose.
- 927 Outer lip strongly toothed.
- 928 „ slightly toothed.
- 929 „ lirate.

- 930 *Luteola*, Smith. P.Z.S., 1879, p. 212, pl. 20, f. 47.
Goto Islands, Japan.
- 931 *Unifasciata*, Pease. Japan.
- 932 *Bibalteata*, Pease.
- 933 Narrower and more cylindrical than the last, whorls carinated.
- 934 *Gracilis*, Pease.
- 935 *Fraterculus*, D'k'r. Japan.
- 936 Similar in form, but twice as large, and rougher.
- 937 *Microstoma*, Pease.
- 938 *Eximia*, H. Ad. P.Z.S., 1872, pl. 3, f. 28. New Hebrides.
- 939 *Woodwardi*, Forbes. P.Z.S., 1850, pl. 11, f. 3. Sandwich Is.
- 940 *Derместina*, Gould. Proc. Bost. Soc. Nat. Hist., 1860. Kikaia.
- 941 Small, white, elongated; between the last and *N. striata*, Reeve.
- 942 White, with large tubercles on the lip.
- 943 Brown.
- 944 An elongated variety.
- 945 Banded, passing into the *N. scabriuscula*, Powis.
- 946 Another variety, showing its close relation to the *N. incrassata*, Müll.
- 947 *Tringa*, Souverbie. Jour. de Conch., vol. 12, pl. 10, f. 7. These shells, commencing with the *N. plebecula*, Gould, and finishing with the *N. tringa*, Souv., are varieties of each other; they are also varieties of the *N. incrassata*, Müll.
- 948 *Pura*, Marr. Pamphlet, p. 13. Nassau, West Indies.
- 949 Intermediate between the last and the next. „
- 950 *Ambigua*, Mtg. Reeve, pl. 28, f. 187. „
- 951 White.
- 952 „ with strong and distant ribs.
- 953 „ similar to the last, but very acute at the apex.
- 954 Tapering to a sharp point, strongly striated.
- 955 *Obtusata*, A. Ad. P.Z.S., 1851, p. 130. Reeve, pl. 20, f. 135.
Philippines.
- 956 Between *N. ambigua*, Mtg., and *N. obtusata*, A. Ad.
- 957 „ „ and *annellifera*, Reeve.
West Indies.
- 958 *Annellifera*, Reeve, pl. 25, f. 168.
- 959 Between the last and the next.

- 960 Antillarum, D'Orb. (not Philippi!) Cuba, pl. 23, f. 1-3.
West Indies.
- 961 Candeï, D'Orb. Cuba, pl. 23, f. 4-6. „
- 962 Paupera, Gould. Upolu and Tongatabou.
=Samoensis. D'k'r.
=Striata. C. B. Ad.
- 963 Is white, taller, and more acute than the last. „
- 964 Passing into the *N. incrassata*, Müll.
- 965 Paucicostata, Marr. Pamphlet, p. 11. Ribs few and distant.
Nassau, West Indies.
- 966 Ribs distant, transverse sulci equi-distant.
- 967 Much broader than the last.
- 968 Rotundicostata, Marr. Pamphlet, p. 8.
- 969 Clathratula, A. Ad. P.Z.S., 1851, p. 99. A very beautiful
shell. Philippines.
- 970 Much narrower and more elongated than the last.
- 971 Laticostata, Marr. Pamphlet, p. 12-13.
- 972 Quinquecostata, Marr. (See description.)
- 973 Nucleolus, Phil. Abbild., pl. 1, f. 8. Mazatlan.
- 974 A variety of the last; is the *N. cinctella*, A. Ad. P.Z.S., 1851,
p. 110. Reeve, pl. 26, f. 176. St. Helena.
- 975 Jónasi, D'k'r. Phil. Abbild., pl. 2, f. 10.
- 976 Burchardi, D'k'r. „ pl. 2, f. 14. Port Adelaide.
- 977 Intermediate between the last shell and *N. semigranosa*, D'k'r.
Australia.
- 978 Sanctæ-Helenæ, A. Ad. P.Z.S., 1851, p. 110. Reeve, pl. 28,
f. 186. St. Helena.
- 979 Nucleolus, Reeve (not Phil.), pl. 27, f. 178.
- 980 Nigella, Reeve, pl. 26, f. 173. New Zealand.
- 981 Nivosa, Marr. Pamphlet, p. 9.
- 982 Hottessieri, D'Orb. Cuba, pl. 21, f. 40-42. West Indies.
- 983 Multigranosa, D'k'r. Phil. Abbild., pl. 2, f. 13. East Indies.
- 984 Quantula, Gould. Pro. Bost. Soc. Nat. Hist., 1861.
St. Simon's Bay.
- 985 A large grained white shell, with strong projecting teeth,
similar to those in the *N. abyssicola*, A. Ad.
- 986 Whorls carinated, shell of a buff colour.
- 987 „ round, white, translucent.
-

- 988 Between *N. thersites*, Brug., and the next.
- 989 *Stolata*, Gmel., p. 3496-7. Mart. Conch., vol. 4, pl. 124,
f. 1167-9. Wood's Index, pl. 23, f. 120.
S. Archer, Singapore.
=ornata, Kien. Ceylon.
- 990 White, with two broad brown bands.
- 991 „ a narrow central band.
- 992 Small, passing into the *N. tiarula*, Kien.
-
- 993 *Luteostoma*, Brod. and Sow. Reeve, pl. 10. f. 63. Panama.
=xanthostoma, Gray. Reeve, Senegal.
- 994 Nodules very large and distant. Mazatlán.
- 995 „ rather close and numerous.
- 996 Transverse striæ almost obsolete.
- 997 Shell smaller, transverse striæ sharply defined, front pale yellow.
- 998 The whole callous is of a dark smoke-brown colour.
Mazatlán.
- 999 Passing into the *N. antillarum*, Phil., enamel white.
- 1000 Short, dumpy, nodules few, very large, oblique, callous of a chrome yellow colour.
- 1001 *Antillarum*, Phil. Zeit. f. Malak., p. 139, 1848. Abbild.,
pl. 1, f. 2. West Indies.
- 1002 Dark, with a central pale band. Reeve, pl. 12, f. 77.
- 1003 Smaller; is the *N. cinisculus*, Reeve, pl. 22, f. 146.
St. Thomas, West Indies.
- 1004 Small, ribs strongly noded, yellow with a few transverse red-brown lines.
- 1005 Shell passing into the *N. acuta*, Say (not Carp't'r.!)
Dyson, Honduras.
- 1006 Tall, narrow, and small, showing a close affinity with the
N. moesta, Hinds.
- 1007 Whorls round, ribs granular, passing into narrow varieties of
N. dentifera, Powis.
- 1008 Keeled in the centre of the whorls.
- 1009 Buff, with red-brown interrupted transverse bands. Reeve
pl. 17, f. 115.
- 1010 *Tessellata*, Reeve, pl. 25, f. 167; is simply a variety of the
N. vibex, Say.

- 1011 Ribs numerous, granules dark brown, with a pale central band, callous thick, not spreading; is an intermediate form between *N. antillarum*, Phil., and *N. crassa*, Koch., varix behind the lip very strong.
- 1012 *Acuta*, Say, passing into the *N. vibex*, Say.
- 1013 " " *N. antillarum*, Phil.
- 1014 Tall and semicostate, passing into the *N. jacksoniana*, Quoy. and Gaim. "*Voy. de l' Astr.*," pl. 32, f. 28-29 (not Kien.!).
- 1015 Similar in form and colour to the *N. tegula*, Reeve.
- 1016 *Tiarula*, Kien., pl. 30, f. 4.
- 1017 *Coronula*, A. Ad. P.Z.S., 1851, p. 96. Philippines.
The *N. tegula*, Reeve, is a variety of the *N. tiarula*, Kien., and the *N. coronula*, A. Ad., is a strongly-ribbed variety of the same shell.
- 1018 *Jacksoniana*, Quoy and Gaim. "*Voy de l' Astr.*," pl. 32, f. 28, 9. Port Jackson, Australia.
- 1019 Very dark, banded, covered with a dark epidermis.
S. Archer, Singapore.
- 1020 White, banded with brown. "
- 1021 Of a yellowish slate colour, banded with brown.
Quoy and Gaim., Port Jackson.
- 1022 Closely allied to the *N. còrticata*, A. Ad.
- 1023 Small, dark brown, strongly ribbed, ribs granular.
- 1024 Tall, callous pale yellow.
- 1025 Callous surrounded by a rufous ring.
- 1026 Narrow and elongated, ribs granular, passing into the following shell. S. Archer, Kauson Creek, Brit. Honduras.
- 1027 *Fida*, Reeve, pl. 13, f. 88.
- 1028 *Vibex*, Say. Jour. Acad. Nat. Sci., 11, 231. Invert. Massach., p. 364, f. 628 (not Reeve!)
"Broad, with a dark band at the top, on the middle, and at the front of the body-whorl."-- *Gould*.
- 1029 *Fratensis*, Perkins. Newhaven.
- 1030 The varieties of *N. Jacksoniana*, with sharp ribs, pass into the *N. acuticostata*, Montrouz, and the broad forms of it show a close affinity with the small varieties of *N. stolidus*, Gmel.
- 1031 *Thersites*, Brug. Ency. Meth., pl. 394, f. 8. Reeve, pl. 10, f. 65.
- 1032 Very dark brown, with a pale band, a large variety.

- 1033 Pale, almost white.
- 1034 Columella white.
- 1035 „ yellow.
- 1036 „ dark smoke-brown.
- 1037 Surrounded by a rufous ring. - S. Archer, Singapore.
- 1038 Shell covered with a brown epidermis. „
- 1039 Passing into the *N. marginulata*, Lam.
- 1040 Strongly ribbed behind the hump on the back. Philippines.
- 1041 Ribbed and cross-grooved. Captain Cawne Warren, Ceylon.
- 1042 Shell with the back scarcely humped, closely cancellated ;
this is similar to the specimen figured in Kiener, pl. 29,
f. 117, as the *N. marginulata*, Lam.
- 1043 Very much elongated, resembling a large *N. leptospira*, A. Ad.
- 1044 Small ; is the *N. thersites*, Quoy and Gaim. “Voy. de
l' Astr.,” pl. 32, f. 22, 3. New Guinea.
- 1045 Ash-coloured, with very dark bands. „
- 1046 *Leptospira*, A. Ad. P.Z.S., 1851, p. 103. Reeve, pl. 13,
f. 84. Philippines.
- 1047 Between the last and *N. pulla*, Linn. (?). = *globosa*, Q. and G.
- 1048 Without the hump on the back ; *N. granifera*, Kiener, pl. 27,
f. 108.
- 1049 Back smooth and glossy.
- 1050 *Pulla*, Linn. (?). Gault., pl. 44, f. N. Operculum triangular,
serrated on two sides. New Zealand.
= *globosa*, Quoy and Gaim. “Voy. de l' Astr.,” pl. 32,
f. 25, 6. Operculum abnormal.
- 1051 Callous projecting and nearly covering the whorls, showing
an affinity with the *N. Kraussiana*, D'k'r.
- 1052 Passing into the *N. leptospira*, A. Ad.
- 1053 *Bellula*, A. Ad. P.Z.S., 1851, p. 102. Reeve, pl. 28, f. 184.
Philippines.
- 1054 *Nana*, A. Ad. P.Z.S., 1851, p. 102. „ pl. 25, f. 164.
Philippines.
- 1055 *Fraudulenta*, Marr. Pamphlet, p. 8. Philippines.
- 1056 More elegant and much narrower than the last. „
- 1057 *Dorsuosa*, A. Ad. P.Z.S., 1851, p. 102. Reeve, pl. 21,
f. 141.

- 1058 *Thersites*, Brug. ; variety short and broad, passing into the next.
- 1059 *Bimaculosa*, A. Ad. P.Z.S., 1851, p. 102, 3. Reeve, pl. 10, f. 61. Philippines.
- 1060 Without the spots.
- 1061 With the back of the shell resembling, and that very closely, the back of *N. crassa*, Koch.
- 1062 Shell almost smooth.
- 1063 „ strongly ribbed.
- 1064 „ cancellated.
- 1065 „ a small variety ; is the *N. emersa*, Carp't'r., Brit. Mus.
- 1066 *Callospira*, A. Ad. P.Z.S., 1851, p. 102. Reeve, pl. 10, f. 66. Apex decollated. Philippines.
- 1067 *Cancellata*, A. Ad. P.Z.S., 1851, p. —. Reeve, pl. 23, f. 155. Philippines.
- 1068 *Callosa*, A. Ad. P.Z.S., 1851, p. —. Reeve, pl. 28, f. 185.
- 1069 *Jonasi*, D'k'r. Phil. Abbild., pl. 2, f. 10.
- 1070 *Labecula*, A. Ad. Reeve, pl. 25, f. 166.
Australia, Philippines, &c.
- 1071 *Mangelioides*, Reeve, pl. 23, f. 152.
- 1072 *Gibbosula*, Linn. Variety with two prominent nodules on the back, olive, freckled with bluish-white. Reeve, pl. 10, f. 64. Philippines.
- 1073 Pale brown, with three tubercles on the back.
Bay of Alexandria.
- 1074 „ with only two tubercles. „
- 1075 Smooth, without nodules. „
- 1076 White. „
- 1077 Dark purple. „
- 1078 Spire decollated. „
- 1079 *Circumcincta*, A. Ad. Reeve, pl. 11, f. 71. Spire decollated.
Bay of Alexandria.
- 1080 Spire perfect. „
- 1081 Spire half dissolved. „
- 1082 *Perlata*, Meusch. Reeve, pl. 11, f. 72. Philippines.
=granifera, Kiener.
- 1083 Of a dark rufous-brown colour.
- 1084 With undulated punctured transverse lines.

- 1085 More elongated, granules smaller; is intermediate between *N. perlata* and *N. hispida*.
- 1086 Nodules fading on the back.
- 1087 Passing into the square noded shell *N. nodulosa*, Marrat. Probably this latter is a deep water form of the *N. perlata*, Meusch.
- 1088 *Mitralis*, A. Ad. P.Z.S., 1851, p. 108. Reeve, pl. 19, f. 128. Philippines.
- 1089 Darker, narrower, and more elongated than the last. S. Archer, Singapore.
- 1090 *Cinnamomea*, A. Ad. P.Z.S., 1851, p. 107. Reeve, pl. 19, f. 126. Philippines.
- 1091 *Badia*, A. Ad. P.Z.S., 1851, p. 107. Reeve, pl. 19, f. 124. Philippines.
- 1092 Narrow and elongated, columella distinctly plicated; allied to the *N. velata*, Gould. Philippines.
- 1093 Short, ribbed longitudinally, intermediate between *N. badia* and *planicostata*, A. Ad.
- 1094 *Compta*, A. Ad. P.Z.S., 1851, p. 107. Reeve, pl. 16, f. 106. Cape St. Antonio, Africa.
- 1095 *Obsoleta*, Say. Gould's Inv. Massac., p. 363, f. 631. N. America.
= *olivæformis*, Kiener.
- 1096 *Melanoides*, Reeve, pl. 22, f. 150. Moreton Bay, Australia.
- 1097 *Succincta*, A. Ad. P.Z.S., 1851, p. 107. Reeve, pl. 12, f. 80. Philippines.
- 1098 Drab, bands pale. G. B. Sowerby, Jun. Mouth of the Indus.
- 1099 Shell smaller and paler in colour, passing into the *N. pallidula*, A. Ad.
- 1100 Shell smaller and cancellated, showing a close affinity to the *N. pulcherrima*, Marr. Taylor Collection. Belcher, Malacca.
- 1101 Shell smaller and longitudinally grooved. „
- 1102 *Semplicata*, A. Ad. P.Z.S., 1851, p. 107. Chusan.
- 1103 *Pallidula*, A. Ad. P.Z.S., 1851, p. 107, 8. Malacca.
- 1104 Passing into the *N. planicostata*, A. Ad.
- 1105 *Quercina*, Marr. (See description.)
- 1106 *Flava*, Marr. Pamphlet, p. 6.
- 1107 *Corniculum*, Olivi. Zool. Adriat., p. 144. Mediterranean.
- 1108 *Costate*.
- 1109 *Semi-costate*.

- 1110 Very broad, shell twice the ordinary size.
- 1111 Narrow and elongated.
- 1112 Pale red-brown.
- 1113 Dark brown.
- 1114 Pale yellow.
- 1115 Interior of the lip strongly toothed.
- 1116 " " almost plain.
- 1116A " " smooth.
- 1117 Pale reddish, banded with brown; *N. fasciolata*, Lam.
Vol. 10, p. 172.
- 1118 Polished and banded, Kiener, pl. 17, f. 62.
- 1119 Smooth, whorls tumid, mouth pale pink.
- 1120 Olive, spotted with white, operculum serrated.
- 1121 Very closely lined longitudinally, aperture of a bright purple
colour. A beautiful shell.
- 1122 Shell small and narrow, passing into the *N. pupinoides*, Reeve.
- 1123 Similar to the last, aperture of a dark smoke-brown colour.
- 1124 Stimpsonianana, C. B. Ad. Panama Shells, p. 72. Reeve,
pl. 21, f. 143. Panama.
- 1125 Intermediate between the narrow forms of *N. antillarum*,
Phil., and *N. exilis*, Powis. This shell agrees tolerably
well with the *N. Stimpsonianana*, Reeve, as per C. B. Ad.
as described by Reeve, but not with the figure; it is a
much more angular shell.
- 1126 Combining the characters of *N. festiva*, Powis, and *N. fasciata*,
Lam. Red Sea.
- 1127 Festiva, Powis. P.Z.S., 1835, p. 95. Reeve, pl. 18, f. 117
= *lirata*, D'k'r. Japan.
- 1128 Nodosa, Marr. (See description.) Belcher, Malacca.
- 1129 Mendica, Gould. Coloured variety. Oregon.
- 1130 Dealbata, A. Ad. P.Z.S., 1851, p. 112. Reeve, pl. 16,
f. 105. Philippines.
- 1131 Nodata, Hinds. "Voy. of the Sulph.," pl. 9, f. 14, 15.
Straits of Malacca.
- 1132 Acutangula, Marr. Pamphlet, p. 9.
- 1133 Cooperi, Forbes. P.Z.S., 1851, pl. 11, f. 4. Sandwich Is.
- 1134 Cooperi of American conchologists. St. Diego.
- 1135 " of Marrat's pamphlet, pl. 1, f. 13. California.

- 1136 *Onerata*, Desh. Marrat's pamphlet, pl. 1, f. 28. Pacific Is.
= *obliquata*, Pease.
- 1137 *Kraussiana*, D'k'r. Zeit. f. Malak., 1846, p. 111. Reeve,
pl. 23, f. 154. Natal Coast.
= *arbiculata*, A. Ad.
- 1138 *Neritea*, Linn. (*Neritula*, Plancus.) Reeve, pl. 23, f. 153.
Mediterranean.
- 1139 Dark purple. Bay of Alexandria.
- 1140 Beautifully marked with wavy brown lines. Mediterranean.
- 1141 *Pellucida*, Risso. Reeve, pl. 23, f. 151. „
- 1142 *Donoviana*, Risso. „
- 1143 *Kamiesch*, Chenu. Man. de Conch., p. 165, vol. 1, f. 792-4.
China.
- 1144 *Insignis*, Ad.
= *italica*, Issel.
= *unifasciata*, Risso.
- 1145 *Lucida*, Ad. and Angas. P.Z.S., 1864. Coodjee Bay, N.S.W.
- 1146 *Anomalum*, C. B. Ad. (*Teinostoma*, H. and A. Ad.)
- 1147 *Politum*, A. Ad.
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- 1148 *Abbreviata*, Chem. (*Desmoulea*, Gray). Reeve, pl. 29, f. 194.
Operculum sub-triangular, plain. Port Elizabeth, Africa.
- 1149 *Tryoni*, Crosse. Jour. de Conch., vol. 19. A variety of the
last.
- 1150 *Pinguis*, A. Ad. P.Z.S., 1851, p. 113. Reeve, pl. 29,
f. 193. Operculum slightly serrated. A. Ad., Senegal (?).
- 1151 *Ponderosa*, Reeve, pl. 29, f. 196. Japan.
= *crassa*, A. Ad. Name pre-occupied.
- 1152 *Obtusa*, Chem., p. 3489. Reeve, pl. 29, f. 195.
= *retusa*, Lam. Port Elizabeth, Africa.
- 1153 *Japonica*, A. Ad. P.Z.S., 1851, p. 113. Reeve, pl. 29,
f. 192. Japan.
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N. GLANS, LINN., AND N. PAPILLOSA, LINN.

The general resemblance between these two shells is greater than may be observed in smooth and reticulated varieties of the same shell. They have in common spiny lips, a red-brown blotch on the back, a columella and grooving of the interior, and

an apex of a reddish tint. In form they are found to resemble each other in many of the varieties, the principal distinctions being the red lines surrounding the *N. glans*, which are altogether wanting in any specimen of *N. papillosa* I have seen. At the same time it must be remembered that we have varieties of the former shell without a trace of the red lines.

The papillæ are for the most part in longitudinal series, and appear as protuberances on the ribs, very similar to the shells of *N. subspinosa*, Lam. A small white or yellowish shell before me, with a rufous stain on the back, coronated at the sutures, and with the ribs very irregular, is so like the *N. papillosa* in form, texture, colour, and striation, as to render the opinion of its being anything but a variety of that shell next to impossible.

The difficulty in understanding how it is possible for these two shells—apparently so different in external appearance, the one being smooth and the other strongly papillose—to be varieties of each other arises from the want of a little careful comparison. The following diagram will show how they unite in the first shell, to which the slightest pretension to specific distinction can be applied, viz., *N. hirta*, Kien. There is no break in either of the lines of the descent, therefore the line of separation appears to be open at the top of the triangle. Over this we have placed *N. reticosa*, J. Sow., from the Crag, one of the oldest and most variable shells in the whole genus *Nassa*. My reasons for placing the alliances in this order is very simple. The *Nassa gemmulata*, Lam., shows a change from the ribbed and cross-grooved shell, having the external sculpture very similar to the shell in question completely changed into a variety with round papillæ. Supposing that the two shells, the smooth and the papillose, have sprung from the old *N. reticosa*, J. Sow., then we might expect to find the papillæ to have been developed in the squares of the reticulated varieties, similar to that which has taken place in the case of *N. gemmulata*, Lam. There is not the slightest reason to suppose that because we find the coronation, ribs, and general sculpture developing from the smooth form that we should not also find instances in which the exactly opposite development, viz., from the sculptured to the plain, takes place.

There are many shells in this genus which present greater changes throughout their series of varieties than we find to have taken place between *N. glans* and all its varieties occurring in series to *N. papillosa*.

<i>N. glans</i> , Linn.	1154 <i>N. papillosa</i> , Linn.
Variety inter- media, Dun- ker. Var. <i>suturalis</i> , Lam. Var. strongly coro- nated, as large as the figure of <i>glans</i> in Reeve, pl. 1, f. 5. Var. upper whorls costate, suture as in <i>glans</i> , but coronated. Var. granules at the suture numerous, ir- regular in size, all the whorls more or less costate. Var. strongly ribbed and coronated. Var. uniting <i>N. hirta</i> and <i>suturalis</i> . Var. <i>hirta</i> , almost smooth.	1155 Var. in rib-like rows. 1156 Var. <i>semi-</i> <i>nodosa</i> , A. Ad. 1157 Var. smooth, glossy, papillæ slightly raised. 1158 Var. colour rufous brown, apex pink. 1159 Var. an elongated form intermediate be- tween <i>N. hirta</i> and <i>seminodosa</i> . 1160 Var. coronated at the sutures, slightly ribbed at the back, smooth and shining in front, passing into <i>N. glans</i> . 1161 Var. papillæ becoming obsolete. 1162 Var. <i>hirta</i> , elongated, ribs somewhat granular.
<i>N. hirta</i> , Kien.	

A D D E N D A .

- 1163 *Interstincta*, Marr. Quart. Jour. of Conch. A long *Terebra*-like shell, allied to the *N. polita*, Marr.
- 1164 *Arcularia*, Linn., var. *sulcifera*, A. Ad. Reeve, pl. 4, f. 24 (deformed). Algoa Bay, Africa.
- 1164A A shell connecting the *N. gaudiosa*, Hinds var. (Reeve, pl. 13, f. 85) with the *N. limata*, Chem.
- 1165 A shell connecting the *N. gaudiosa* with dark var. of *N. monile*, Kien.
- 1166 Elongated, dark mottled variety of *N. gaudiosa*, Hinds. Sandwich Islands.
- 1167 Thin, almost hyaline shells.
- 1168 *N. gaudiosa*, Hinds, passing into *N. mucronata*, A. Ad.
- 1169 " " " *N. picta*, D'k'r.
- 1170 " " " *N. glans*, Linn.
- 1171 " " " *N. punctata*, A. Ad.
- 1172 *Picta*, D'k'r., closely beaded at the sutures.
- 1173 *Mucronata*, A. Ad. All but the body-whorl ribbed and cross-grooved.
- 1174 Between the last and *N. obesa*, Neville.
- 1175 *Spirata*, A. Ad., coronated.
- 1176 *Muricata*, Reeve, pl. 14, f. 73; is a pale *N. spinosa*, Lam. *Columella* smooth.
- 1177 *Muricata*, Kien., pl. 27, f. 110; is another variety of the same shell. *Columella* smooth.
- 1178 *Rufula*, Reeve, passing into *N. glans*, Linn.
- 1179 *Nodifera*, Powis, var. *levukana*, Watson. "Challenger" Expedition. Levuka.
- 1180 Allied to the last, ribs few and distant, strongly variced. Filby, China.
- 1181 Between the last and *N. stolata*, Gmel.
- 1182 *Kieneri*, Anton. The penult-whorl has been injured, throwing the upper whorls to one side.
- 1183 *Picta*, D'k'r., *columella* strongly plicate.
- 1184 " upper whorls costate, sutures coronated.
- 1185 " oblique, apex purple, resembling *N. mucronata*, A. Ad.

- 1186 *Picta*, D'k'r., grooved below the sutures and at the base.
- 1187 Between *N. velata*, Gould, and narrow forms of *N. mucronata*, A. Ad.
- 1188 *Lævigata*, Marr., with the upper whorls and part of the body-whorl ribbed, showing a passage into varieties of *N. sequijorensis* and *ravida*, A. Ad.
- 1189 *Coronata*, Brug., var. white, lip spiny; is the *N. Bronni*.
Phil. Abbild., pl. 1, f. 17. Java.
- 1190 *Coronata*, Brug., passing into the light grey varieties of the *N. nodifera*, Powis, and the *N. marginulata*, Lam.
- 1191 *Coronata*, Brug., with the nodules divided, forming two short riblets.
- 1192 *Coronata*, Brug., semicostate.
- 1193 *Arcularia*, Linn., having the first four nodules large and all the rest small and corded.
- 1194 *Arcularia*, Linn., having all the upper whorls closely cancellated and the body smooth and polished.
- 1195 *Nodifera*, Powis, passing into the *N. stolata*, Gmel.
- 1196 *Picta*, with the internal lyrellæ interrupted and displaced.
- 1197 *Livescens*, Phil., has the spire inclining towards the aperture (deformed).
- 1198 *Livescens*, Phil., has the spire inclining towards the back of the shell (deformed).
- 1199 *Livescens*, Phil., callous broad, covering the front of the shell.
- 1200 *Livescens*, Phil., a large, elongated shell with a double lip.
Philippines.
- 1201 *Livescens*, Phil., with a thick piece of shelly matter cemented on to the base of the lip, a very clumsy affair.
- 1202 *N. glans*, Linn., var. *suturalis*, longitudinally flamed and spotted, passing into the *N. marmorata*, Anton.
- 1202A *Incrassata*, Müll., so like the *N. ambigua*, Montg., as to make it difficult to distinguish the West Indian from the Mediterranean shell. Is it probable that Montague could have obtained a variety similar to this on the British coast?
- 1203 *Incrassata*, Müll., var. *glaberrima*, having a kind of mosaic or tessellated sculpture.
- 1204 *Incrassata*, Müll., var. *glaberrima*, transversely punctato-striate.
Malta.
- 1205 *Incrassata*, Müll., var. *gibberula*, Marr. (Taylor Collection.)
Mediterranean.

- 1206 *Incrassata*, Müll., var. *varicosa*, Turt., small, whorls somewhat angular, without varices. Malta.
- 1207 *Incrassata*, Müll., passing into the *N. luctuosa*, A. Ad., striated transversely.
- 1208 *Incrassata*, Müll., with the tip of the spire yellow.
- 1209 Between *N. capensis*, D'k'r. and *N. signata*, D'k'r.
- 1210 „ „ „ and *N. serotina*, A. Ad.
- 1211 „ „ „ and *N. tenella*, Reeve.
- 1212 „ „ „ and *N. terebroides*, Reeve.
- 1213 „ *N. serotina*, A. Ad., and *N. incrassata*, Müll.
- 1214 „ *N. signata*, D'k'r., and „ „
- 1215 „ *N. tenella*, Reeve, and „ „
- 1216 „ *N. terebroides*, Reeve, and *N. labiata*, A. Ad.
- 1217 „ *N. serotina*, A. Ad., and *N. signata*, D'k'r.
- 1218 „ *N. distorta*, A. Ad., and *N. monile*. Kien.
- 1219 „ *N. lachrymosa*, Reeve, and *N. monile*, Kien.
- 1220 „ *N. prompta*, Marr., and *N. fida*, Reeve.
- 1221 „ *N. incrassata*, Marr., and *N. plebecula*, Gould.
- 1221A „ „ „ and *N. argentea*, Marr.
- 1222 „ *N. babylonica*, Watson, „ „
- 1223 *Marmorea*, A. Ad., described as two-banded by A. Adams. P.Z.S., 1851, p. 106.
- 1224 *Marmorea*, A. Ad., described by Reeve, at p. 2, species 7, as three-banded.
- 1225 *Marmorea*, A. Ad., marbled, but without bands.
- 1226 Between *N. marmorata*, Anton, and *N. marmorea*, A. Ad.
- 1227 „ „ „ and *N. mutabilis*, Linn.
- 1228 „ „ „ and *N. glans*, Linn., slender forms.
- 1229 *Gibbosula*, Linn., spire incurved (deformed). Alexandria.
- 1230 „ „ banded with short, transverse, dark-brown lines, particularly in young shells.
- 1231 „ „ var. *circumcincta*, A. Ad., decollated.
- 1232 „ „ „ with the spire perfect.
- 1233 *Plebecula*, Gould, a narrow transparent form, passing into the varieties of *N. clathratula*, A. Ad.
- 1234 *Cinctella*, Gould, a narrow transparent form, passing into the varieties of *N. clathratula*, A. Ad. Viti Islands.

- 1235 *Paupera*, Gould, scabrous variety. Japan.
 =*samoensis*, D'k'r.
 =*balteata*, Pease.
- 1236 *Paupera*, Gould, var. *tasmanica*. Tasmania.
- 1237 *Burchardi*, D'k'r., broad variety. =*labecula*, A. Ad.
- 1238 *Labiosa*, J. Sow. Crag. Var. *maculata*, A. Ad. Small and
 narrow. Philippines.
- 1239 *Marginulata*, Lam., dark brown, with a white central band.
 S. Archer, Singapore.
- 1240 „ ribs distant, interstices grooved. Canton.
- 1241 *Tænia*, Gmel., small, dark brown, with a central white band.
 New Guinea.
- 1242 „ smooth, highly polished.
- 1243 *Plicata*, Meusch. (?), passing into the *N. venusta*, D'k'r. Ceylon.
 =*thersites*, Brug.
- 1244 *Tabescens*, Marr. (See description.)
- 1245 *Compta*, A. Ad., passing into the *N. succincta*, A. Ad. var.
- 1246 „ „ *N. velata*, Gould.
- 1247 „ „ *N. pallidula*, A. Ad.
- 1248 *Bimaculosa*, A. Ad., a small oblique form. Singapore.
- 1249 „ var. *immersa*, Carpt., variety elongated.
- 1250 *Sesarma*, Marr., all the whorls, with the exception of the two
 last, ribbed and coronated.
- 1251 *Jacksoniana*, Quoy and Gaim., passing into *N. subspinoso*,
 Lam. S. Archer, Singapore.
- 1252 Between *N. undata* and *sesarma*, Marr.
- 1253 *Callospira*, A. Ad., ribs plain.
- 1254 „ ribs cross-grooved.
- 1255 „ ribs granular.
- 1256 *Semigranosa*, D'k'r. The thick white granular varieties pass
 into the white varieties of the *N. nodicincta*, A. Ad.
- 1257 Between *N. sertula*, A. Ad., and *N. polita*, Marr.
- 1258 „ *N. polita* and *interstincta*, Marr.
- 1259 „ „ and *bucculenta*, Marr.
- 1260 „ *N. bucculenta*, Marr., and *corniculum*, Olivi.
- 1261 *Tænie*, Gmel., smooth, polished, and pale in colour.
 New Guinea.
- 1262 *Marginulata*, Mart. and Chem., 2nd edit., pl. 12, f. 7, 8, is
 intermediate between the shell of Lam. and the next.

- 1263 *Sordida*, A. Ad., callous very thick and spreading.
- 1264 *Reticulata*, Linn., from the coast of Norway. Zool. Record.
- 1265 ,, var. 1., *cancellata*, Chem.
- 1266 ,, var. 2., *paucicostata*. =*nitida*, Jeff.
- 1267 ,, var. 3., *paupercula*, with thick epidermis.
- 1268 *Reticulata*, Linn., a large oblong variety with broad varices, covered with a brown epidermis. Shell $1\frac{1}{2}$ inches long.
Mediterranean.
- 1269 *Reticulata*, Linn., very like the *N. plicosa*, D'kr., both in form and colour.
- 1270 *Reticulata*, Linn., *lirellae* on the inner lip broken and interrupted.
- 1271 *Reticulata*, Linn., tapering to a very fine point, distorted.
- 1272 *Reticulata*, Linn., closely allied both in form and sculpture to the *N. gemmulata*, Lam.
- 1273 *Reticulata*, Linn., closely allied both in form and sculpture to the *N. monile*, Kien.
- 1274 *Reticulata*, Linn., closely allied both in form and sculpture to the shell mentioned at No. 452.
- 1275 *Hanleyana*, Marr. (See description.)
- 1276 *Fossata*, Gould. California.
= *N. elegans*, Reeve, con. syst., 1842, name pre-occupied by J. Sow., Min. Couch.
= *Zaphon elegans*, Reeve. A. Ad., Rec. Moll., vol. 1., p. 121.
= *Tritia fossata*, Gould. ,, ,, ,, p. 122.
= *Nassa Morleti*, Crosse Jour. de Conch., vol. 16, 1868, pl. 6, f. 3.
- 1277 *Columella* and lip deep orange.
- 1278 Body-whorl semicostate, with strong transverse granular lines.
- 1279 A small *N. grata*, Marr., narrow, with the centre of the lip thickened, like a *columbella*. Siam.
- 1280 Between *N. mendica*, Gould, and *N. festiva*, Powis. Oregon.
- 1281 ,, *N. sinusigera* and *costata*, A. Ad.
- 1282 ,, ,, and *pauperata*, Lam.
- 1283 *Gibbosula*, Linn., bored through the thickest part of the callous.
- 1284 ,, with a pale-brown epidermis.
- 1285 ,, with the hump on the left hand side of the shell, instead of on the right.
- 1286 A shell uniting the *N. vibex* and *acuta*, Say, and *N. tiarula*, Kien.

- 1287 Cooperi, Forbes var. Marrat's pamphlet, pl. 1, f. 13. California.
 1288 Between the last and antillarum, Phil. Honduras.
 1289 Sinarum, Phil. var. North China.
 1290 Nodata, Hinds var., interior with two brown bands. Canton.
 1291 Muricata, Quoy and Gaim, with the whole callous granular and plicate. Ceylon.
 1292 Bimaculosa, A. Ad., with the hump on different parts of the back of the shell.
 1293 Bimaculosa, A. Ad., passing into varieties of *N. thersites*, Brug.
 1294 " " " of *N. leptospira*, A. Ad., and *N. foveolata*, D'k'r.
 1295 Between *N. striata*, Reeve, and *N. paucicostata*, Marr.
 1296 " *N. pura*, Marr., and *N. ambigua*, Montg.
 1297 " *N. delicatula*, A. Ad., and "
 1298 Corrugata, Taylor Collection. A thin *Columbella*-like shell, with oblique ribs. California.
 1299 Corrugata, var. broader, spotted with red-brown.
 1300 " var. elongated, scabrous.
 1301 Acuta, Say, passing into the small form of *N. sturmii*, Phil.
 1302 A variety of *N. concinna*, Powis, with the whorls rounded, causing a depression at the sutures.
 1303 Another in which all the whorls, with the exception of the body-whorl and half of the penult, are white; here an injury has taken place, and the last turn and a half are banded.
 1304 Another, very narrow, passing into the *N. Smithii*, Marr.
 1305 " with the beaded line at the sutures, deformed.
 1306 Between *N. concinna*, Powis, and *N. japonica*, A. Ad.
 1307 *Cærulea*, Marr. (See description.)
 1308 *Plebecula*, Gould, large and thin, passing into the *N. japonica*, A. Ad.
 1309 *Plicosa*, D'k'r., passing into the *N. pallida*, Powis.
 1310 *Marmorata*, Anton, " *N. graphitera*, Beck.
 1311 *Undata*, Marr., " *N. Asperula*, Brocchi.
 1312 *Elegans*, Kien., " *N. lævigata*, Marr.
 1313 *Canaliculata*, Lam., " "
 1314 *Hirta*, Kien., " *N. monile*, Kien.
 1315 *Algida*, Reeve, " *N. marmorata*, Anton.

- 1316 Algida, Reeve, passing into the *N. lævigata*, Marr.
 1317 Kieneri, Anton, „ „
 1318 Nodifera, Powis. „ *N. hirta*, Kien.
 1319 „ „ *N. monile*, Kien.
 1320 Marginulata, Lam., small forms, passing into the *N. plani-*
costata, A. Ad.
 1321 Limata, Chem., passing into the *N. undata*, Marr.

DESCRIPTIONS.

WHAT are the shells described in the following pages?

My answer to this question is, I do not know.

The amount of knowledge is confined to the single specimens in most instances, and to three or four at most, in any case. These may be isolated individuals, or they may exist in thousands in certain localities not yet explored. At present these shells appear to me to be distinct, simply because of my ignorance of all their alliances, but that this should be the real state of the case is exceedingly improbable, if not absolutely impossible. That future conchologists will be found to follow any rules I may think proper to dictate to them, is neither my wish nor my intention; if they do not act upon their own independent judgment they will not make much progress.

- 1128 *N. nodosa*, Marrat.—Shell somewhat turreted, sutures deeply grooved, whorls rounded, very strongly noded, nodules large in the centre of the whorls and tapering towards each end, those on the last whorl representing a bi-tubercular keel; ribs white, with rather dark bluish-grey broad belts in the interstices; the first four or five whorls of the apex are yellow, aperture sub-oval, columella with two broad folds, interior brown, with a white central band. Belcher, Malacca.
- 45 *N. prompta*, Marrat.—Shell ovately conical, highly polished, pale yellowish white, with two reddish-purple dotted bands, one in the centre of the body-whorl, the other near the canal at the base, whorls rather flattened, ribbed to the base in

front and not more than half-way down behind, raised into blunt nodules at the sutures, aperture semi-lunate, columella thickened but not spreading, tubercular, outer lip very thick, with a thin edge near the aperture; throat with rather strong and somewhat distant ridges, canal very short, stained on each side of the base with brown.

This may be only a variety of that interminable shell, *N. incrassata*, Müll., but I have not seen any varieties that are likely to connect them.

854 *N. picturata*, Marrat.—Shell ovately-conical, glossy, rather broad at the base, white, with numerous transverse brown bands, the central one being the most distinct, apex purple, whorls rounded, somewhat angular below the sutures, strongly ribbed longitudinally and closely grooved transversely, sutures only represented by a fine line, the penult-whorl is angularly noded, aperture oval, columella defined, plicate, outer lip thick, within plicate.

This may be only a large variety of *N. versicolor*, C. B. Adams. The nearest shell figured is one in Kiener, at plate 21, figure 81, under the title of *N. ambigua*, Montague. Our shell is twice as large as Kiener's figure.

N. acuminata, Marrat.—Shell acuminate-oblong, of a pale ash-brown colour, banded with pale brown, whorls obliquely rounded, grooved near the base of the last whorl, strongly coronated at the sutures, sutures canaliculate, the six or seven upper whorls strongly ribbed, the penult semicostate, aperture oval, columella with a thin spreading callous, outer lip thickened, thin on the edge and spiny at the base, throat plicate.

An intermediate form connecting the smooth shells of *N. trifasciata*, Gmel., with the *N. scalaris*, A. Ad.

Obs.—Another shell is quite smooth and shows the passage into *N. trifasciata*, Gmel., on the one hand, into the *N. scalaris*, A. Ad., on the other.

N. ferruginea, Marrat.—About three-quarters of an inch long; it is similar in form to some of the smaller varieties of *N.*

punctata, A. Ad., but is less acuminate; the colour is white, flamed and marbled with orange, transversely lined; there are three or four folds behind the thickened lip, sutures finely plicated. This is an interesting shell; it shows a passage from such shells as the *N. lentiginosa* and *punctata*, A. Ad., &c., into *N. glans*, Linn.

- 452 *N. lyræformis*, Marrat.—Shell ovate, ventricose, longitudinally ribbed, ribs curved, transversely grooved, one-third of the body-whorl from the base closely granular, pale, with two broad olive-green bands, granules white, sutures coronated, with a groove-line just below the beads, columella spreading, with the ribs protruding through the thin callous, throat brown with a white band, closely plicate. China.

Obs.—While the form of this shell is that of *N. gemmulata*, Lam., the colour and texture resembles that of *N. marginulata*, Lam., and *N. nodifera*, Powis; the sculpture also shows this intermediate character.

- 389 *N. bucculenta*, Marrat.—Shell somewhat acuminate-ovate, of a pale chocolate brown colour, banded and longitudinally striped with darker tints of a similar colour, whorls ventricose, smooth, the upper whorls strongly costate, the body-whorl deeply grooved at the base, sutures either closed or canaliculate, aperture oblong-ovate, columella plicate at the base, the callous clearly defined, not spreading; the outer lip is thickened, with two or three folds behind it, thin at the edge and slightly coronated, throat closely plicated.

Philippines.

Obs.—There appears to be a union of several supposed distinct species in this shell. In the first place it resembles the *N. elegans*, Kiener, in its broad form; in the next place it can be associated with certain varieties of the *N. glans*, Linn; in small specimens again, some of the shells are thick and narrow, approaching some of the forms of *N. compta*, A. Ad.; and lastly, the square markings closely resemble those on the *N. algida*, A. Ad.

- 47 *N. polita*, Marrat.—Shell elongately-conical, polished, of a brownish-ash colour, with pale bands a little darker than the

ground-colour of the shell, apex dark in some of the specimens, whorls somewhat rounded, smooth, granularly costate near the apex and deeply grooved at the base of the body-whorl, outer lip very thick, inner lip smooth in some of the specimens and lyrate in others, columella circumscribed, mostly smooth. Mauritius.

Obs.—An elongated shell, allied to the last as well as to *N. compta*, *succincta* and *pallidula*, A. Ad.

1105 *N. quercina*, Marrat.—Shell somewhat acuminate-ovate, thick, ash-grey, marbled with fainter tints, whorls rounded, smooth, with the exception of the upper whorls of the spire which are costate, as is usual in almost every *Nassa*, columella smooth, curved, callous very thick, considerably expanded below, and continued up the body-whorl nearly to the sutural canal; outer lip thickened, forming a blunt edge to the border of the aperture, inner lip strongly plicate.

Obs.—This is nearly allied to that very variable shell, *N. corniculum*, Olivi, and may be only a variety of it.

778 *N. granulosa*, Marrat.—Shell elongately-conical, spire acuminate, pale buff, variegated with reddish brown, whorls convex, longitudinally ribbed and transversely grooved, granulated, with a beaded necklace below the sutures, aperture oval, columella plicate, inner lip strongly lyrate, thin on the edge.

Obs.—This shell clearly illustrates the tendency of all these forms to begin with the broadest and gradually to narrow into the most narrow and elongated varieties. I have a good series of the different varieties of form of the *N. splendidula*, Dunker, but this is far more bulimoid than any of the slender forms of that shell.

768 *N. lactea*, Marrat.—Shell ovately-conical, white, apex pale purple, whorls rounded, costate throughout, ribs smooth, interstices closely grooved, coronated at the sutures, grooved below the beads, one of the ribs has a second bead below the first or sutural one.

Obs.—Resembling the *N. cælata*, A. Ad., and the *N. rugosa*, Marr.; it also shows an affinity with the *N. fasciata*, Lam., and the *N. trivittata*, Say.

N. decorata, Marrat.—Shell ovately-conical, whorls convex, longitudinally ribbed and strongly noduled, white, banded with brown, sutures somewhat canaliculated, aperture oval, columella wrinkled, outer lip thick, white, interior plicate, the last whorl angular at the base.

Obs.—These very small shells may prove to be a variety of some other species ; but if so, they have taken a very peculiar and abnormal form.

571 *N. grata*, Marrat.—Shell ovately-conical, greyish-ash banded with brown, whorls rounded, strongly ribbed, interstices closely and deeply grooved, sutures noduled, the first forming the thickened lip large, aperture oval, columella thin, a little expanded, warty, outer lip thick, white, inner lip in some of the specimens almost smooth, in others with few and distant strong folds, crenated, toothed at the base. Canton.

Obs.—I have no doubt that this shell will prove to be one of the connecting links between *N. marginulata*, Lam., and the *N. Wilsoni*, Reeve (not C. B. Adams.) Another variety, twice the size of the shells described, has been shown to me by Mr. Archer, it is from the Gulf of Siam.

1307 *N. cærulea*, Marrat.—Shell ovately-elongated, greyish-ash, banded with blue, polished, whorls rounded, longitudinally finely striated, sutures closed, aperture oval, columella strongly wrinkled, callous thickened, somewhat spreading, outer lip thick, interior toothed.

Obs.—This shell, which is about the size and nearly the colour of *N. glabrata*, A. Ad., is not distantly related to the *N. trifasciata*, Gmel. ; it is also closely allied to the *N. planicostata*, A. Ad., and to some of the varieties of *N. corniculum*, Olivi ; operculum crenated.

1244 *N. tabescens*, Marrat.—Shell ovately-conical, white, banded with brown, whorls rounded, strongly ribbed, ribs smooth, interstices closely grooved ; the body-whorl has the ribs close and numerous, the penult-whorl has not more than half as many, the third has very few ; this may arise from some defect in the animal ; aperture oval, columella plicate, callous thin, outer lip thick, grooved.

Obs.—This small shell is allied to the *N. marginulata*, Lam., and also to the *N. fraudulenta*, Marr.

775 *N. pusilla*, Marrat.—A *N. sequijorensis*, A. Ad., in miniature.

Shell ovately-turreted, pale reddish-brown, banded with darker colour, the upper whorls and behind the lip costate, the last whorl finely striated longitudinally, grooved near the base, almost smooth in the middle, aperture oval, columella slightly wrinkled, outer lip thick, prickly denticulated on the edge. S. Archer, Singapore.

1125 *N. lauta*, Marrat.—Shell acuminate-conical, of a greyish lead colour, with a few interrupted reddish-brown transverse lines, whorls angular, with prominent nodules at the angles, transversely ridged and finely striated, strongly ribbed, ribs distant, apical whorls translucent, aperture angular, outer lip thickened, toothed on the inside, columella thin, plicate.

Belcher, Malacca.

Another variety has white bands, and the red-brown lines are replaced by white ones. Belcher, Malacca.

Obs.—These are intermediate between the *N. stimpsonian*, C. B. Ad., and *N. exilis*, Powis.

554. *N. crassicostata*, Marrat.—(Not the Pamphlet, p. 6.) Shell ovately-conical, pale drab, waxy, with two leaden bands, one near the middle of the body-whorl, the other in dots in the interstices near the sutures, whorls convex, strongly ribbed, very thick behind the lip, aperture somewhat oval, columella smooth in two and wrinkled in other two varieties, outer lip very thick, inside plicate. Bombay.

Obs.—Between the short, broad forms of *N. nodifera*, Powis, and the *N. costata*, A. Ad.

972 *N. quinquecostata*, Marrat.—Shell ovately-turreted, white, apical-whorls flesh coloured, whorls rounded, somewhat angular below the sutures, body-whorl with five prominent ribs, with one, sometimes two, smaller intermediate ones between them, interstices finely striated, aperture semi-ovate, columella smooth with two oblong folds at the base, outer lip thickened, interior plicate. This shell would be thought

to be a very distinct species by most conchologists, but having a very fine series of its allies, I am enabled to trace it into broader and well-known forms. The shells of this group are extremely variable in both form and in the number of their ribs. *N. ambigua*, Montg., *N. annellifera*, Reeve, *N. obtusata* and *clathratula*, A. Ad., *N. rotundicostata* and *paucicostata*, Marr., are all varieties of one shell, and *this is another variety*.

- 869 *N. sculpta*, Marrat.—Shell ovately-fusiform, white, banded with pale rufous, whorls rounded, longitudinally ribbed and transversely grooved, slightly coronated at the sutures, aperture obliquely oval, columella smooth, with a single fold at the base, callous somewhat spreading, white, outer lip thickened, with a thin edge, interior plicate. S. Archer, Natal.

Obs.—This is an interesting shell, showing a passage from the smooth *N. compta*, A. Ad., to the *N. propinqua*, J. Sow., *N. splendidula*, D'k'r., and the *N. marginulata*, Lam., small varieties, without the thickened callous.

- 1275 *N. Hanleyana*, Marrat.—Shell ovately-globose, white, with pale indistinct yellow bands, whorls round, longitudinally costate and transversely grooved, all but the body-whorl strongly granular, aperture oval, columella plicate in one, almost smooth in another, callous somewhat spreading, outer lip very thick, inside closely plicate.

Obs.—So completely does this shell show the union between the papillose shells, such as the *N. gemmulata*, Lam., var. *verrucosa*, A. Ad., *N. splendidula*, D'k'r., &c., with such shells as the *N. ambigua*, Montg., *N. annellifera*, Reeve, and the *N. obtusata*, A. Ad., &c., as to leave no doubt about the one being a continuation of the other, in a direct line of descent.

- 793 *N. Parva*, Marrat.—Shell ovately-conical, white, lined and banded with dark brown, longitudinally ribbed and transversely striated, ribs few and distant, somewhat knotted, aperture ovate, columella plicate, callous defined, outer lip thick, inner edge denticulated, apex of the spire dark purple.

GENERIC ALLIANCES.

LAMARCK separated the genus *Nassa* from the parent *Buccinum*, Linn., in 1792. "This genus is not admitted by all conchologists as a necessary separation from the Linnæan genus *Buccinum*, and, in fact, Lamarck subsequently re-united them, without assigning any reason for so doing."—S. Wood's "*Mollusca from the Crag*," vol. 1, p. 28.

In the *Nassa reticosa*, J. Sow., variety *rugosa*, we have a shell possessing the characters of *Buccinum*. Several of the *Nassæ* are simply small forms of their large parents; the *N. pyramidalis*, A. Ad., is a small form of *Buccinum undatum*, Linn., var. *glaciale*; *N. undata*, Marr., was so named in consequence of its resemblance to *B. undatum*, and many other representative forms might be given by way of illustrating the alliances of the two supposed genera.

The *Desmoulea abbreviata*, Chem., is very nearly allied to the *Nassa pupa* and *N. conglobata*, Broc., both of which pass by means of *N. obliquata*, Broc., into *N. mutabilis*, Linn. One of the most variable shells in the *Buccinum* group is the *Phos senticosus*, Linn.; the broad and short forms are closely allied to some of the shells in the genus *Nassa*. In the animal of *Phos* one of the principal differences pointed out is the foot tapering into a filament—not a very satisfactory character, I must say, after the statement with regard to the same part of the animal of *Nassa* being bifid. Another shell, figured in D'Orbigny's "*Cuba*" under the name of *Cancellaria candei*, D'Orb., is an intermediate form between *Nassa* and *Phos*. The *Strongylocera*, Morch., is a badly defined group, including such shells as the *Phos textilinus*, Sow., and *Buccinum costatum*, Quoy and Gaim., "*Voy. l' Ast.*," pl. 30, f. 17, 18, &c.

Bullia is closely allied to *Nassa*; we find a great resemblance existing between the small forms of the *B. semiflammea*, Reeve, and the shells placed by H. and A. Adams as *Aciculina*, a subdivision of the genus *Nassa*; the two varieties, *Bullia polita*, Lam., and *semiplicata*, Gray, are related to the *N. trifasciata*, Gmel., and the narrow forms of *N. glans*, Linn.; another shell named and figured by Reeve as the *B. truncata*, is much nearer the shells in the genus

Nassa than *Bullia* : it has a thickened lip, a plicate columella, and the inner lip is toothed. *Bullia* differs from *Nassa* in the animal having no eyes ; but the parallel series of forms is so extensive as to suggest that some examples of *Bullia* are only eyeless forms of *Nassa*. Notwithstanding the fact that, as vegetable feeders, the *Rissoæ* have been placed at a great distance from the *Nassæ* in most modern arrangements, they present numerous points of resemblance ; many of the shells are miniature representatives of the larger *Nassæ*, and the canal at the base is rudimentary in several *Nassæ*.

The *N. rissoides*, Marr., very closely borders on the genus *Rissoa*.

The genus *Nassaria*, Link, is composed of *Nassæ* with elongated canals, and the *N. pagoda*, Reeve, is an intermediate form.

The *Northia serrata* has so many characters in common with the elongated forms of *N. trifasciata*, Gmel., that it is difficult to see how they differ ; they are similar in texture, in colour, in having the upper whorls cancellated, in having a thickened outer lip, and in having sharp, prickly serratures on the edge of the lip. Several shells, placed by some authors among the *Strongylocera*, Morch., and by H. and A. Adams in a sub-division of the *Nassæ* (*Uzita*), are intermediate in their characters between *Nassa* and *Purpura* ; they consist of the *N. pallida*, Powis., Reeve, pl. 9, f. 30 ; *Bucc. Gaultertianum*, Kiener, plate 19, f. 70. ; *N. plicosa* and *Morrisii*, Dunker, &c. ; and the *Purpura nassoides*, Quoy. and Gaim., is a nassoid form of *Purpura*.

The *N. varicifera* and *N. scalaris*, A. Adams, show an affinity with the genus *Scalaria*, or *Scala*, as it is shown to be by priority.

Many of the shells placed in the genus *Columbella* are difficult to distinguish from this genus (*Nassa*). The hard and fast lines drawn tightly round certain genera are much simpler to recognize on paper than when observation is brought to bear upon them practically. I have had considerable difficulty in determining to which of the two genera some of my shells belong, and many of my conclusions regarding them have been anything but satisfactory. The two genera glide so imperceptibly into each other that it is impossible to separate them.

There are three shells belonging to different genera that appear to converge to a point. The first is the *Nassa* (*Aciculina*) *vittata*, A. Ad., an almost smooth form; the second is the *Terebra* (*Euryta*) *aciculata*, Lam., smooth varieties; and the third is a *Bullia* from the Cape of Good Hope, having about the same proportions as the two previously-named shells, glossy and marked with bluish spots below the sutures. We have also specimens of the *Columbella* *Menkeana*, Reeve, from Australia, closely allied to the three elongated shells above-mentioned. Clark, in his "Marine Testacea," has placed both the genus *Buccinum* and *Nassa* in the genus *Murex*, from the resemblance the animals have to each other. The *Cyllene*, Gray, is by no means distantly related to this genus (*Nassa*), the *N. crassicostata*, Marr., and the *C. lyrata*, Lam., are similar in colour, texture, ribbing, columella and thickened outer lip, the narrower and oblique form is all in which they differ. *Planaxis* is represented by a small shell described by Garrett under the name of *N. anthracina*, "Proc. Acad. Nat. Sci., Philad., 1873." The *Cominella* (*Buccinum*) *nassoides*, Reeve, as its name implies, is closely related to the shells in this genus. Another genus, formerly included in *Buccinum*, the *Truncaria*, A. Ad. and Reeve, consists of shells allied to some of the varieties of *Nassæ*. The *N. varicifera*, A. Ad., in its mature state, resembles both in cancellation and the varices shells in the sub-genus *Rimella* in *Gladius*=*Rostellaria*. *N. tritoniformis*, Kiener, is allied to the *Nassaria suturalis*, A. Ad., Singapore.

AN ILLUSTRATION OF ONE OF THE LINES OF DESCENT.

THE varieties of the following shells meet at so many points, and intersect each other in such a variety of ways, that it appears to me quite useless to attempt to separate them into species.

The fifty shells to which names have been given do not represent a quarter of the forms in my cabinet, nor could any conchologist determine the relationship existing between these specimens without first having seen the numerous unnamed and unfigured varieties by which they are connected. Very few

persons have seen a shell of the *Nassa incrassata*, Müller, at least twice as broad, and with a much more expanded lip, than the large variety figured in Reeve's "Conchologia Iconica," notwithstanding there are such shells and many other curious forms equally unknown to conchologists. It is such varieties as the specimens just mentioned that have enabled me to unite so many of the spurious species.

At least two hundred examples of these shells are in the trays before me, and the diverging forms appear to be very numerous among them.

Some of the names given in this list are only synonymes, others are known to be varieties, and have been generally recognised as such by conchologists. There is not a group, nor scarcely a shell in any of the groups, that one or other of the varieties of *Nassa incrassata*, Müller, does not approach rather closely, and the intermediate forms between it and other named shells are very numerous. A recent shell is so like the fossil *N. asperula*, Brocchi, that it is a difficult matter to determine in what respect they differ the one from the other.

The most appropriate name for this shell is that applied to it by Philippi, viz., *Nassa variabilis*, for a more variable shell is not to be found either in this or any other genus in the whole category of shells.

We have given this example as an illustration of one of the lines of descent, but not necessarily terminated at either end, neither do we profess to give the varieties in their consecutive order.

There are two other groups closely allied to this, and several of the shells belonging to each pass from one to the other by imperceptible gradations.

One is composed of shells covered with granules or papillæ, and includes the *N. gemmulata*, Lam., and its variety *verrucosa*, A. Ad., *N. granulata*, Marr., &c. The shells in the other group are more or less ribbed and cross-grooved; included in this series is the *N. prismatica*, Brocchi, *N. versicolor*, C. B. Ad., *N. striata*, Reeve, &c.

N. tritoniformis, Kien.

Incrassata, Müll. A large form, passing into the last.

A short and broad form, large.

Beautifully cancellated.

Ribs oblique.

Passing into the variety *N. glaberrima*, Gmel.

These large varieties, of which there are at least twenty, pass into the medium, and thence into the small and very small forms.

The following names, for the most part, were applied to certain varieties—

N. exilis, Gmel.

Lacepedii, Payr.

Ascanias, Brug.

Macula, Mont.

Rudis, Gault.

Minuta, Penn.

Other varieties passing into the—

N. asperula, Brocchi.

Plebecula, Gould.

Multigranosa, D'k'r.

Hotessieri, D'Orb.

Ambigua, Montg., tall forms.

Striata, Reeve.

Varicosa, Turton.

Coccinella, Lam.

Rosacea, Reeve.

There are at least a dozen varieties of *N. incrassata* of a rose colour.

Narrow forms pass into the—

N. tenella, Reeve.

Serotina, A. Ad.

Signata, D'k'r.

Capensis, variety ribbed and cross-grooved.

Capensis, D'k'r.

The last-named shell passes into the narrow costate varieties of *N. glans*, Linn.

The small varieties pass into the—

N. Compacta, Angus.

Æthiopica, Marr.

Pumilio, Smith.

Small cylindrical varieties pass into the—

N. bibalteata, Pease.
Unifasciata, Pease.
Microstoma, Pease.
Fratercula, D'k'r.
Babylonica, Watson.
Dermestina, Gould.
Tringa, Souv.

Other varieties. *N. scabriuscula*, Powis.
 Nigella, Reeve.

N. glaberrima, Gmel. I consider this to be a form of *N. incrassata*, Müll. Its varieties are very numerous, at least fifty are before me.

N. cuvieri and *lacepedii*, Payr.
Variabilis, Phil.
Tinei, Marav.
Unifasciata, Kien.
Gallandiana, Fischer.
Maderensis, Reeve.
Encaustica, Brusina.
Gemmellari, Biondi.

Intimately connected with these shells are the following, most of which are West Indian forms :—

<i>N. paucicostata</i> , Marr.	
<i>Quinqueplicata</i> , Marr.	
<i>Rotundicostata</i> , Marr.	
<i>Annellifera</i> , Reeve.	
<i>Obtusata</i> , A. Ad.	Philippines.
Variety.	West Indies.
<i>Hanleyana</i> , Marr.	
<i>Nucleolus</i> , Phil.	
<i>Pura</i> , Marr.	
<i>Versicolor</i> , C. B. Ad.	
<i>Sanctæ Helenæ</i> , A. Ad.	
<i>Acuta</i> , Captr.	
<i>Crebristriata</i> , Captr.	

A specimen of the *N. Sternsiana*, Garrett, has just come to hand; it proves to be a variety of the *N. crenolirata*, A. Ad., from Singapore. The author had his doubts and sent for information.

VARIETIES OBTAINED AT ONE LOCALITY BY A SINGLE HAUL OF
THE DREDGE.

Captain Horsfall, of the steamship "Canopus," plying between Liverpool and Alexandria, calling at Malta and Gibraltar, placed all the shells brought up from a rich spot of dredging ground in a match-box, and gave the box with its contents to me. It is labelled, "Off Malta."

There were quite a large number of rare and interesting genera almost peculiar to the Mediterranean Sea, such as *Typhis* Sowerbyi, *Broderip*; *Murex cristatus*, *Brocchi*, var. *Blainvillei*; *Raphitoma gracilis* and *linearis*, *Montague*, *costata*, *Donovan*, and var. *coarctata*; *Erato laevis*, *Donovan*; *Marginella* (*Gibberula*) *clandestina*, *Brong.*, and *miliaria*, *Linn.*, &c. Among the bivalves were *Kellia suborbicularis*, *Montg.*; *Woodia digitaria*, *Linn.*; *Mytilocardia aculeata*, *Poli*, &c. There were also two or three different species of *Brachiopods*, among them *Crania*, *Rostrata*, *Hœn*, &c. The most interesting, as well as the most curious part of the collection obtained, however, is a series of varieties belonging to the genus *Nassa*, illustrating a phase in the history of these shells totally at variance with all my previously conceived ideas regarding the distribution of what are termed species and varieties. I had obtained a fine series of varieties of the *Nassa incrassata*, *Müller*, as well as a numerous collection of its variety, *Nassa glaberrima*, *Chemnitz*, from the different stations at which the most distinct forms had been collected, the impression existing in my mind being that the changes that had taken place in these varieties had been produced by local variation, such as temperature, food, &c., but when the varieties were obtained, as in the above instance, by Captain Horsfall, upon the same bank and in the same water, no such governing influences could have been instrumental in producing them. The first is a narrow variety of the *N. prismatica*, *Brocchi*, with oblique ribs, showing an affinity with the *N. miga*, *Adamson*, from Senegal. So many of the Mediterranean Shells are represented by African forms that we cease to regard the circumstances as any-

thing peculiar. The second are narrow varieties of the *N. reticulata*, Linn.; one of these is strongly warted; the warts are translucent, like wax. The third is a beautifully-mottled and banded specimen of the *N. corniculum*, Olivi, with a bright purple aperture; there is also a bright-banded variety of the *N. fasciolata*, Lam., with a yellowish-brown mouth. Another variety has strong longitudinal ribs, with groove-like striae at the base. The fourth is a broad form of the *N. incrassata*, Müll., with oblique ribs, a rough, strong shell, with small portions for the epidermis still attached to it. A tall narrow variety, with somewhat carinated whorls, deeply excavated at the sutures; another shell has round whorls, and a third has strong varices. Two other remarkable varieties of the shell known as *N. varicosa*, Turt., one with strong granules and somewhat angular whorls, without varices; the other specimen has the upper whorls and about one-third of the body-whorl granular, and the remaining part simply grooved; this is also without varices. Another granular variety is banded with brown, has a brown columella, and the ribs are distant from each other. The following varieties of the *N. glaberrima* are extremely interesting, showing such a large amount of variation in a shell that is only itself a variety. The first of these is a shell with round whorls, having a single red band in the centre of the body-whorl, similar to the *N. unifasciata*, Kien; the upper whorls are all costate, while the body-whorl is only slightly grooved transversely. The second is a strongly costate, small shell, showing an affinity with the *N. delicata*, A. Ad. Another variety of this costate shell has transverse equi-distant lines covering the whole surface of the shell. A third specimen has the ribs few and wide apart. A fourth variety is white, with strong longitudinal ribs, showing a close affinity with the *N. sinuigera*, A. Ad., and seems to assimilate with some of my varieties of *N. costata*, A. Ad. A fifth form is bright and shining, beautifully marked, with short interrupted brown lines, similar to those occurring on the young specimens of *N. gibbosula*, Linn. One specimen, similar to the variety figured in Reeve, pl. 19, f. 129, has been bored through the last whorl. I wonder if these fellows are cannibals. A sixth is a

dark brown, costate variety, with two pale lines on the thick brown callous of the columella. The last, although not the least interesting form, is an almost white shell, tessellated with brown, the strongly curved ribs and transverse striæ showing a close connection with the *N. marginulata*, Lam., and all contained in a common half-penny match-box.

There were among them two specimens so remarkably like the *N. zonalis*, A. Ad., that it is very difficult to determine in what respect (with the exception of size) they differ, the ground-colour, the banding and the general outline form of the shell and rounding of the whorls are all similar in each.

S U M M A R Y.

I do not wish to state that the evidence derived from a study of the *Nassæ* is sufficient to prove that the genus is constituted by *one shell in an endless variety of forms*. Nevertheless, the mass of evidence appears to me to point in that direction.

It is often a matter of extreme difficulty to decide whether a shell figured as distinct is not merely a deformity; such abnormal examples may be found in the *N. sulcifera*, A. Ad., from Algoa Bay, the *N. distorta*, A. Ad., and the *N. stolidia*, A. Ad., all figured from solitary specimens. Many of the shells in my cabinet are more or less deformed varieties; two of them are quite as much deserving of being distinguished as any of those above enumerated. The first is *N. picta*, D'k'r., with the spire elongated in about the same proportion with that of the *N. monile*, Kien., variety *distorta*, A. Ad., and presenting as much difference from the ordinary state of the shell as that does. The other is *N. coronata*, Brug., with the thickened *callus* projecting and covering one-half the penult-whorl; the new piece of shelly matter forming the lip has been placed obliquely and has obliterated both the sutural canal and the nodules; a second piece is costate for about one quarter-of-an-inch; this is also a former injury, and then the shell assumes its ordinary appearance. I should as soon think of making

a hump-backed or club-footed man into a distinct species from his uninjured brothers as putting such shells as these forward as distinct species. The innumerable divergences, not only in the direction of named shells, but into others not hitherto named, were so constantly springing up, that the direct lines appeared to constitute only a portion of the total lines of divergence. It must also be borne in mind that the varieties can only extend to the centre between two supposed species.

Several of the shells appearing in the early part of this paper are treated as if they were distinct, whereas in the latter pages they are placed as varieties of other shells; this arises from the fact that the numerous comparisons which had to be made, and the extraordinary number of examples which had to be compared, produced at length sufficient evidence to induce me to unite these shells under the head of varieties.

For the last fifteen or sixteen years I have been examining the subject of variation, and in all the genera containing an extensive series of what are termed species the study has presented results very similar to those obtained from the shells in the genus *Nassa*. The largest collection of Olives known is contained in eighteen well filled drawers in the cases of the Free Public Museum of Liverpool, and I firmly believe, that if carefully examined, the two hundred and twenty species would be reduced to a dozen, or at the most, twenty. The greater part of the species named and described by myself would be reduced to the rank of varieties. An examination of the Cowries would result in a general amalgamation of whole lines of variable shells, most of which have been described as *species* for the money-value attached to a name. Let any person examine the *Cypræa onyx*, Linn., and compare with it such shells as *C. spadicea*, Swain., *C. pyrum*, Gmel., *C. physis*, Brocchi, &c. These two last-named shells are closely allied to varieties of *C. carnicolor*, an acknowledged variety of *C. onyx*. The *C. eburnea*, Barnes, *C. miliaris*, Gmel., and *C. Lamarckii*, Gray, are the same shell, the one an albino and the other two differently marked varieties, the *C. turdus*, Lam., might follow as a somewhat flattened variety. The offshoots of *C. cribraria*, Linn., should never have been separated

into anything more than varieties. *C. Cumingii*, Gray, *C. Gaskoinii*, Reeve, *C. esontropia*, Duclos, *C. Peasei*, MSS., and *C. cribellum*, Gask., are the varieties referred to. The *Conus marmoreus*, *Bandanus*, *Nicabarius*, *Kraussii*, *nocturnus*, *de Burghia*, &c., are a series of varieties, and Lamarck has given in the "Encyclopædia Methodique" some very interesting unstable forms. How such a singularly marked cone as that figured in Reeve's "Conchologia Iconica," pl. 14, f. 74, should have escaped without being honoured by a specific name is a marvel. In the genus *Marginella*, that line of cylindrical shells commencing with the largest, *M. philippinarum*, Redfield, and ending with the *M. minina*, Guilding, are a very undistinguishable lot. The *Volutes*, taking the *V. reticulata*, Reeve, as a starting point, and finishing with *V. prætexta*, Reeve, including *V. undata* and its varieties, *Ellioti* and *Angasi*, *pallida*, *Turneri*, &c., form a series of one variable shell.

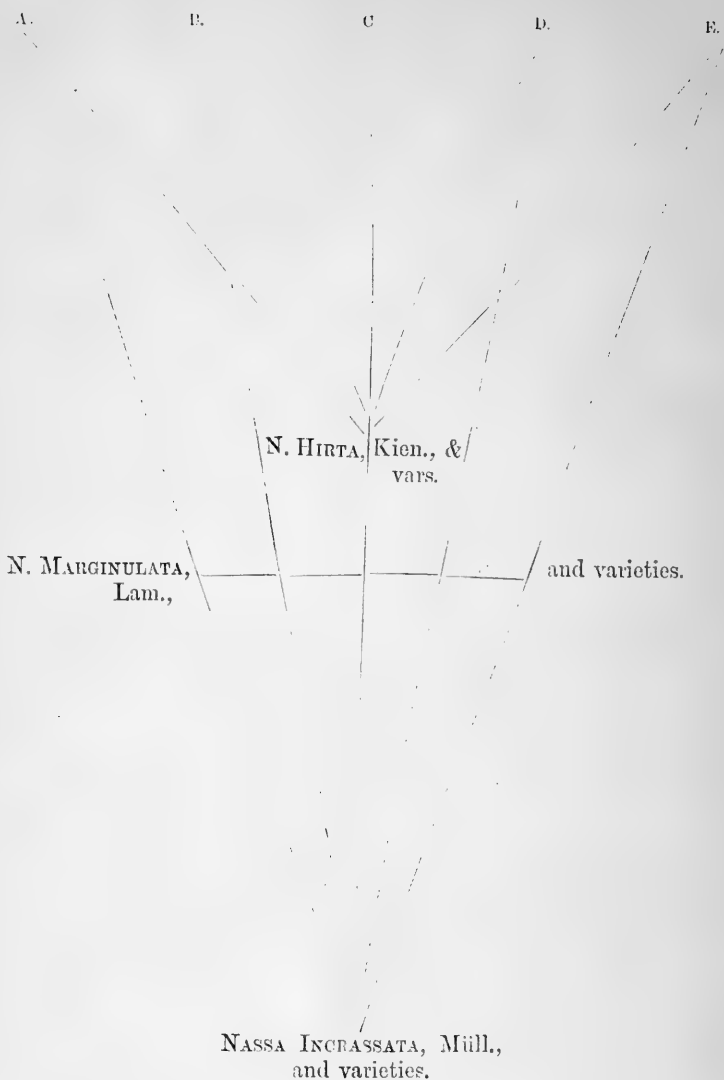
The changes taking place in the opinions, not only of conchologists, but of scientific men generally, are destined to improve the basis upon which systematic zoology rests. Many of the dogmas propounded during the early ages of scientific research have continued to the present time, the question never having been asked, how far these opinions were liable to be modified? Many, nay I may say most, of the older Naturalists who had imbibed their ideas in their youth and tenaciously held on to them as long as they lived, have passed away, and it is to be hoped the greater part of the prejudices obstructive to science have gone with them. An entirely new school has emerged into life and activity, cultivating an earnest desire to uphold only that which is true, and ready at least to give a fair hearing to the opinions of others. We are just emerging out of a false system, and find ourselves surrounded by students whose minds have been gradually preparing for the great changes taking place and that are likely to result from the combined efforts of many master minds.

The characters on which molluscan genera and species have been founded are more or less artificial; admitting the existence of true but unsuspected affinities between the Testacea of distant genera. The great work of the future in conchology will be that of

tracing the descent of recent from fossil forms ; an arduous task in which an artificial system is certain to mislead its adherents. The writer's aim will be accomplished if the foregoing imperfect notes shall in anywise prove helpful to future investigators in illustrating the derivation of recent from extinct forms amongst the objects of his study.

EXPLANATION OF THE DIAGRAM ON THE FOLLOWING PAGE.

I have constructed the following diagram for the purpose of illustrating the lines of ascent, as projected from a given point. If a shell be taken from any part of the series and traced in detail, in the descending order, it is certain to terminate in one or other of the varieties of *Nassa incrassata*, Müll. There are numerous branches projecting from these main stems of the diagram, but the order in which they occur has not been sufficiently determined to enable me to map them correctly. In each of the longer projected lines a very large series of varietal forms occur, and when the shells are placed upon them there is very little difficulty in tracing the lines of affinity. All the known forms in this genus belong to one or other of these five lines, for many branches after leaving the stem bend and turn back into the same line, higher up or lower down, as the case may be. The varieties of *N. marginulata*, Lam., are so numerous that we find them uniting with varieties in every ascending or descending line of affinity in the series ; hence the line has been placed across the five lines in the diagram, showing the intermediate position they occupy. I exhibited the shells composing the diagram as a branch in the pedigree of the genus *Nassa*, illustrating the affinities of 40 named forms with *Nassa hirta*, before the members of the Liverpool Literary and Philosophical Society, October, 1880, and found the inquiring portions of the audience were satisfied with the result obtained.



- A.—N. Tænia, Gmel., and varieties.
 B.—N. Papillosa, Linn., and varieties.
 C.—N. Reticosa, J. Sow., var. rugosa.
 Passing *upwards* into Buccinum undatum, Linn.
 D.—N. Reticosa, J. Sow., var. elongata.
 E.—N. Glans, Linn., and varieties.

O M I S S I O N S.

- 1322 *Complanata*, Powis. P.Z.S., 1835, p. 96. Atacama.
 1323 var. *gemma*, Phil. Abbild., pl. 1, f. 5.
 1324 var. *scabriuscula*, C. B. Ad. (not Powis.) Panama.
 1325 var. *Wilsoni*, C. B. Ad. Panama Shells, p. 67 (not Reeve)
 Panama.
 1326 *Nivea*, A. Ad. P.Z.S., 1851, p. 110. Reeve, pl. 18, f. 122.
 Philippines.
 1327 *Nodicostata*, A. Ad. P.Z.S., 1851, p. 99. Reeve, pl. 15, f. 97.
 Philippines.
 1328 *Novæ-zealandiæ*, Reeve, pl. 18, f. 186. New Zealand.
 1329 *Isabellei*, D'Orb., Voy. dans "l'Amer.," pl. 61, f. 22-3 (not
 Reeve). San Blas.
 1330 *Labiata*, A. Ad. P.Z.S., 1851, p. 114. Reeve, pl. 24, f. 159.
 Malacca.
 1331 *Maculata*, A. Ad. P.Z.S., 1851, p. 114. Reeve, pl. 16,
 f. 103, is *labiosa*, J. Sow. var.
 1332 *Maderensis*, Reeve, pl. 27, f. 182, is *incrassata*, Müll. var.
 Madeira.
 1333 *Margaritifera*, Dkr., Zeit. f. Malak., 1847. Phil. Abbild.,
 pl. 1, f. 12. Reeve, pl. 9, f. 58, as *costellifera*, A. Ad. Quoy
 and Gaim, Voy. de "l'Astrolabe," pl. 32, f. 16-17, as
reticulata, Linn.
 1334 *Mæsta*, Hinds, Voy. of the "Sulph.," pl. 9, f. 18-19.
 Gulf of Papagayo, Cent. America.
 1335 *Paupera*, Gould, is *plebecula*, Gould, Carpenter (from types).
Sinarum, Phil., 1289, is incorrect, Hanley.
 1336 *Splendidula*, Dkr., Zeit. f. Malak., 1846, p. 160. Phil.
 Abbild., pl. 2, f. 16.
 = *stigmæria* and *densigranata*, A. Ad.
 1337 *Agapeta*, Watson. Lavuka, 12 fath.
 1338 *Trinodosa*, Smith. Jour. Linn. Soc., vol. 12, p. 545, pl. 30, f. 2.
 San Christoval.
 1339 *Sculpta*, Marr., passing into *N. jacksoniana*, Quoy and Gaim.
 1340 variety with tubercles passing into the *N. subspinosa*, Lam.
 1341 *Costate* and semi-costate varieties of *N. corniculum*, Olivi,
 resemble elongated forms of *N. jacksoniana*, Quoy & Gaim.
 1342 *Coronata*, Brug. var. Reeve, pl. 3, f. 20 c. Annesley Bay.
 1343 There are two shells before me, both of a smoke-brown colour :
 one is *N. coronata*, Brug., the other is *N. arcularia*, Linn.;
 and there is a third similar in colour and texture, a variety
 of *N. nodifera*, Powis.

- 1344 *Interlirata*, Smith. Jour. Linn. Soc., vol. 12, p. 545, pl. 30,
f. 5. San Cristoval, Solomon Islands.
- 1345 *Hirta*, Kien., pl. 19, f. 72. Reeve, pl. 1, f. 1, var.
New Holland and the Island of Tongatabou.
- 1346 var. elongated with strong, smooth ribs.
- 1347 *Elata*, Gould. Pro. Bost. Soc. Nat. Hist. Liberia, W. Africa.
- 1348 *Elegans*, J. Sow. Min. Con., pl. 447, f. 1, 1824.
(See 1358.) A fossil of the Crag.
- 1349 *filosa*, Gray, is *picta*, Dkr. var. Reeve, pl. 6, f. 35.
Philippines.
- 1350 *Fontanei*, D'Orb., Voy. dans "l'Amer.," pl. 77, f. 5-6.
Payta, Peru.
- 1351 *Foveolata*, Dkr. Reeve, pl. 13, f. 83. Mart. and Chem. ed. 2,
pl. 6, f. 1-3. Indian Ocean.
- 1352 *Foliorum*, Gmel., Rumph., pl. 29, f. v.
- 1353 *Galilea*, Clark.
- 1354 *Lacandrei*, Falin.
- 1355 *Lens*, Chem., is *N. nitidula*, Linn.
- 1356 *Lineolata*, Phil.
- 1357 *Kochiana*, Dkr.
- 1358 A shell resembling, both in form and sculpture, the *N. elegans*, J. Sow., a fossil of the Crag.
- 1359 *Scabriuscula*, Powis. P.Z.S., 1835, p. 95. Reeve, pl. 26,
f. 174. Cent. America.
- 1360 *Harpularia*, Marr. pamphlet, p. 8.
- 1361 *Inflata*, Lam., is *mutabilis*, Linn. var.
Bucc. { = *tessulatum*, Gmel.
= *foliorum*, Gmel.
- 1362 *Grana*, Lam. Kiener, pl. 16, f. 58. Kiener, Seas of India and
(Isle of France, in error.) Mediterranean.
- 1363 *Lirella*, Beck., is *pauperata*, Lam., white.
- 1364 *Gruneri*, Dkr., Zeit. f. Malak, 1846, p. 171. Phil. Abbild.,
pl. 2, f. 2. Philippines.
- 1365 *Microstoma*, Pease, is *dermestina*, Gould var., Carpenter.
- 1366 *Turricula* and *unifasciata*, Pease, are *plebecula*, Gould var.
- 1367 *Multicostata*, A. Ad. P.Z.S., 1851, p. 98. Reeve, pl. 20,
f. 138. Philippines.
- 1368 *Teretiuscula*, A. Ad. P.Z.S., 1851, p. 108. Reeve, pl. 16,
f. 104. Eastern Seas.
- 1369 *Obesa*, Neville. Jour. Asiat. Soc., Bengal, 1875, p. 95, pl. 8,
f. 2-3. Kutch.

- 1370 var. *ceylanica*. Ceylon and Penang.
 1371 *Obtusata*, A. Ad. P.Z.S., 1851, p. 100. Reeve, pl. 20,
 f. 135. Philippines.
 1372 *Optata*, Gould. Pro. Bost. Soc. Nat. Hist., 1860.
 Sydney Harbour.
 1373 *Onerata*, Desh. Marr. pamphlet, pl. 1, f. 28.
 = *obliquata*, Pease.
 1374 *Pediculina*, Gould. Pro. Bost. Soc. Nat. Hist., 1860.
 Hong Kong Harbour.
 1375 *Picta*, Dkr. Phil. Abbild., pl. 2, f. 6. New Guinea.
 1376 *columella* strongly plicated.
 1377 *Pulchra*, Gray. See 742, p. 52.
 = *ringens*, A. Ad.
 1378 *Pusio*, A. Ad. P.Z.S., 1851, p. 100. Reeve, pl. 26, f. 172.
 Philippines.
 1379 *Quantula*, Gould. Pro. Bost. Soc. Nat. Hist., 1860.
 St. Simon's Bay.
 1380 *Plebecula*, Gould. Pro. Bost. Soc. Nat. Hist.
 1381 *Pallida*, Powis. P.Z.S., 1835. Reeve, pl. 9, f. 60. Panama.
 1382 *Papillosa*, Linn. Reeve, pl. 2, f. 12. Philippines.
 1383 *Compacta*, Angas, is *N. dermestina*, Gould. Australia.
 1384 *Reevei*, A. Ad., is *fossata*, Gould.
 1385 *Reposta*, Gould. Pro. Bost. Soc. Nat. Hist., 1860. Sydney.
 1386 *Reticosa*, J. Sow. Min. Con., pl. 110, f. 2, 1815.
 A fossil of the Crag.
 1387 *Adamsiana*, Marr.
 = *retecosia*, A. Ad. P.Z.S., 1851, p. 97. Reeve, pl. 5,
 f. 28. Philippines.
 1388 *Sesarma*, Marr. pamphlet, p. 13, pl. 1, f. 14.
 Whydah, West Africa.
 1389 *Signata*, Dkr. Phil. Abbild., pl. 2, f. 17. East Indies.
 1390 *Semistriata*, Brocchi., is *propinqua*, J. Sow.
 1391 *Stolata*, Gmel. Mart. and Chem., pl. 124, f. 1167-1169.
 1392 *Casta*, Gould. Pro. Bost. Soc. Nat. Hist., 1849.
 Pacific Ocean.
 1393 *Sulcifera*, A. Ad. P.Z.S., p. 98. Reeve, pl. 4, f. 24.
 1394 *Suturalis*, Lam., is *glans*, Linn. var. Reeve, pl. 1, f. 4.
 Kien., pl. 24, f. 96. Philippines, Mauritius, &c.
 1395 *Turrita*, A. Ad. P.Z.S., 1851, p. 110.
 1396 *Tricarinata*, Lam. Vol. 10, p. 171, No. 31.

- 1397 Unidentata, Powis. Mart. and Chem., ed. 2, pl. 6, f. 4-6, is dentifera, Powis.
- 1398 Nodicincta, A. Ad., white.
- 1399 white, tall, and very narrow, ribs almost obsolete.
- 1400 var. allied to the *N. nivifer*, Marr. These pass into the varieties of *N. versicolor*, C. B. Ad., and some of the varieties show an affinity with the *N. echinata*, A. Ad.
- 1401 Nucleolus, Phil. Abbild., pl. 1, f. 8. (Not Reeve.)
West Indies, St. Helena.
= cinctella, A. Ad. Reeve, pl. 26, f. 176.
- 1402 Between *N. versicolor*, C. B. Ad., and *pura*, Marr.
- 1403 Miga, Adans. Senegal, pl. 8, f. 10. Reeve, pl. 13, f. 86.
Kien., pl. 22, f. 87. Senegal.
- 1404 var. obliqueplicata, Dkr., Zeit. f. Malak, 1847, p. 61.
- 1405 var. pale purple inside and out.
- 1406 var. brown
- 1407 var. white, passing into varieties of *N. incrassata*, Müll.
- 1408 var. resembling varieties of *N. versicolor*, C. B. Ad.
- 1409 var. banded with broad and narrow belts.
- 1410 var. passing into varieties of *N. limata*, Chem.
- 1411 Myristica, Hinds, Voy. of "Sulph.," pl. 9, f. 10-11.
Hinds, Cape of Good Hope.
- 1412 Fuscata, A. Ad. P.Z.S., 1851, p. 112. Reeve, pl. 19, f. 127.
- 1413 Dentifera, Powis. P.Z.S., 1835. Kien., pl. 31, f. 1. Reeve,
pl. 19, f. 130. Near Valparaiso, Capt. Whiteway.
- 1414 var. elongated, with large granular ribs.
- 1415 var. broad and short.
- 1416 var. about the size and resembling the *N. fasciata*, Lam.
- 1417 var. very small grained. Kien., pl. 31, f. 2.
- 1418 var. obscura, without granules. Kien., pl. 31, f. 3.
- 1419 Acuta, Say, is *N. vibex*, Say, var.
- 1420 Acuta, Carpenter, is *decussata*, Kien. var. (Not pagoda,
Reeve var.)
- 1421 Cancellata, A. Ad. P.Z.S., 1851, p. 99. Reeve, pl. 23, f. 155.
The name preoccupied by Chem. Philippines.
- 1422 Candens, Hinds, Voy. of the "Sulphur," pl. 9, f. 6-7. Reeve,
pl. 6, f. 39. Marquesas Islands.
- 1423 Mucronata, A. Ad., passing into the monile, Kien., variety
from Shark's Bay, into the large varieties of *N. gayi*,
Kien., and thence into the large forms of *N. incrassata*,
Müll. The affinity of the varieties of these shells is with
varieties of *N. marginulata*, Lam., and *glans*, Linn.

- 1424 *Coronata*, Brug., and *laevigata*, Marr. Varieties of each of these shells, when in fresh and fine condition, are translucent and highly polished, and closely resemble each other; there are also similar specimens to be found among the examples of *N. arcularia*, Linn.
- 1425 Some of the small forms of *N. laevigata*, Marr., appear to pass into the *N. glabrata*, Sow.
- 1426 *Marmorea*, A. Ad. var., sutures crenated. Island of Formosa. This is closely allied to *N. mutabilis*, Linn., and *marmorata*, Anton.; both the smooth and striated forms of this shell are varieties of *N. mutabilis*, Linn. See the figure in Woods' Index, at pl. 22, f. 47, Senegal, and Marrat's pamphlet, pl. 1, f. 4-5. S. Archer, Ceylon. The above shells pass into the striped *N. elegans*, Kiener, then into yellow and white varieties without markings.
- 1427 A variety of the last, resembling *N. laevigata*, Marr. Some of the elongated forms are related to the *Bullia bellangeri*.
- 1428 *Picta*, Dkr., passing into the *N. gaudiosa*, Hinds.
- 1429 Between *N. picta*, Dkr., and *filosa*, Gray.
- 1430 *Picta*, Dkr., beautifully mottled.
- 1431 *Kieneri*, Anton., beautifully variegated. New Guinea.
- 1432 *Hirta*, Kien., passing into the *N. suturalis*, Lam.
- 1433 „ „ *N. seminodosa*, A. Ad.
- 1434 *Lentiginosa*, A. Ad. P.Z.S., 1851, p. 105. Reeve, pl. 3, f. 15. (Bluish purple.)
- 1435 var. drab, dotted at the sutures with brown.
- 1436 var. mottled with white, brown and ash.
- 1437 var. pale.
- 1438 *Punctata*, A. Ad. P.Z.S., 1851, p. 105. Reeve, pl. 8, f. 54. Philippines.
- 1439 var. elongated, passing into the next.
- 1440 *Velata*, Gould.
- 1441 *Luctuosa*, A. Ad. P.Z.S., 1851, p. 105. Reeve, pl. 16, f. 109, passes into dark *glaberrima*, Gmel. Philippines. The four last are varieties of one shell. They pass into the *N. gaudiosa*, Hinds, *N. graphitera*, Beck., and into narrow forms of the *N. suturalis*, Lam.
- 1442 *Woodwardii*, Forbes. P.Z.S., 1851, p. 273, pl. 11, f. 3. Sandwich Islands.
- 1443 *Plicatella*, Gould. Pro. Bost. Soc. Nat. Hist., vol. 13, p. 280. The name pre-occupied by A. Ad. British Burmah.
- 1444 *Dominula*, Tap. Canif.
- 1445 *Crenicostata*, A. Ad. Rec. Moll., vol. 1, p. 120.

- 1446 *Collaria*, Gould. C. B. Ad., Panama Shells. Reeve, pl. 25, f. 169. Panama.
- 1447 *Cinctella*, Gould.
- 1448 *Coturnix*, Dkr.
- 1449 *Scitula*, A. Ad. Rec. Moll., vol. 1, p. 119.
- 1450 *Ravida*, A. Ad., with ribs almost obsolete. I have no doubt that this passes into smooth forms of *N. lævigata*, Marr.
- 1451 *Cingenda*, Marr.
This variety has a short body-whorl and a long spire, sutures mostly canaliculate, ash-grey with two darker bands, strongly ribbed and cross-grooved, aperture resembling the *N. nitidula*, Linn., lip sharply spined.
- 1452 Another variety is similar in form to the last, but is of a pale buff colour, with two reddish-brown bands. Japan.
- 1453 Resembling the variety described by Smith as a form of *N. sequijorensis*, A. Ad., sutures only slightly canaliculate.
- 1454 Intermediate between the last and *N. nitidula*, Linn., as figured in Reeve, pl. 3, f. 18. This shell is of a much coarser texture, and has stronger ribs than those described above. The lip is finely but sharply denticulate, as in *N. sequijorensis*, A. Ad. These varieties are all about the size of the *N. scalaris*, A. Ad.
- 1455 Shell elongately-conical, narrow, white or pale buff, palely two-banded, ribs very irregular as well as the cross-grooves, sutures depressed, beaded, lip denticulated, varices none. I believe that this variety is the *N. varicifera*, A. Ad., without the varices.
- 1456 *Marginulata*, Lam., passing into the variety at No. 1454.
- 1457 small forms passing into the variety *N. gemmulifera*, A. Ad.
- 1458 with the beads at the sutures divided by a groove-line as in *N. candens*, Hinds.
- 1459 *Arcularia*, Linn., with the beads at the sutures divided by a groove-line as in *N. candens*, Hinds.
- 1460 *Variegata*, A. Ad., with the beads at the sutures divided by a groove-line as in *N. candens*, Hinds.
- 1461 *Splendidula*, Dkr., passing into the *N. nivosa*, Marr.
- 1462 *Keenii*, Marr., passes into the *N. gemmulifera*, A. Ad.
- 1463 *Conferta*, Martens, var. *recediva*. Cape de Verds.
- 1464 *Teretiuscula*, A. Ad. P.Z.S., p. 108. Reeve, pl. 26, f. 104. Formosa and S. Africa.
- 1465 A small shell resembling the *N. abyssinica*, Marr., but having the callous extended over the front of the shell; is from the Mauritius, G. H. Ponsonby, Esq., London.
- 1466 *Marginulata*, Lam. var., columella strongly plicate.
- 1467 passing into *N. sequijorensis*, A. Ad.

- 1468 *Scalaris*, A. Ad. var., passing into *N. sequijorensis*, A. Ad.
- 1469 Passing from *N. sequijorensis* small forms into the *N. planicostata* and *micans*, A. Ad.
- 1470 Passing into narrow forms of *N. ravida*, A. Ad.
- 1471 *Ravida*, A. Ad., passing into *N. marginulata*, Lam.
- 1472 *N. oriens*, Marr.
- 1473 *N. cælata*, A. Ad.
- 1474 *N. sinensis*, Marr.
- 1475 Small *N. splendidula*, Dkr., resembling the costate variety of *N. incrassata*, Müll., No. 126.
- 1476 A broad form, resembles the *N. variegata*, A. Ad.
- 1477 A white variety of *N. reticosa*, A. Ad., is about one quarter of an inch long. S. Archer, Singapore.
- 1478 *Candens*, Hinds, a variety with two folds at the base of the columella, shell a quarter of an inch long, and narrow.
- 1479 columella much less expanded than in the large form. Of medium size.
- 1480 *Quadrata*, Marr., covered with a grayish-brown epidermis. = *cremata*, Reeve (not Hinds). S. Archer, Singapore.
- 1481 *Ravida*, A. Ad., in form, but smooth ribbed.
- 1482 More elongated than *N. ravida*, A. Ad., with curved ribs. A very beautiful form.
- 1483 *Sequijorensis* in form, but smooth ribbed.
- 1484 not half the usual size, yellowish-brown with darker bands, and a broad stripe of white behind the lip below the coronated suture.
- 1485 *Marginulata*, Lam. variety, with the first two rows of granules divided; it has also a groove dividing the granules at the sutures.
- 1486 with the back of the body-whorl smooth (young).
- 1487 *Ventricosa*, Lam. Anim. Sans. Vert., vol. 10, p. 168. Enc. Meth., pl. 494, f. 4. (Desmoulea, H. & A. Ad.) = *rufula*, Kien. (Not Reeve.)
- 1488 Between *N. costata* and *sinusigera*, A. Ad. The small varieties pass into *sinusigera*, and the large into *costata*.
- 1489 *Sinusigera*, A. Ad., passing into the *N. fraudulenta*, Marr.
- 1490 showing an alliance with the *N. concentrica*, Marr.
- 1491 strongly grooved in the interstices between the ribs.
- 1492 callous spreading in front.
- 1493 allied to the small, smooth ribbed form of *N. incrassata*, Müll.
- 1494 a variety of the colour and texture of *N. marginulata*, Lam.

- 1495 *Tiarula*, Kien., with granular ribs, passing into the *N. acuta*,
Say,
1496 spire short, shell very broad.
1497 narrow, spire elongated.
1498 with grayish-brown epidermis.
1499 *splendidula*, Dkr., passing into the *N. nivosa*, Marr.
1500 *Nodulosa*, Marr., var. bright orange-yellow. Taylor Collection.
1501 *Vincta*, Marr., a variety allied to the *N. planicostata*, A. Ad.
1502 *Nucleolus*, Phil., passing into the *N. ambigua*, Mtg.
1503 var. of a rufous, brown colour, banded at the sutures,
middle and base with dark brown.
1504 var. white.
1505 var. lined with brown and white alternate lines.
1506 *Ambigua*, Mtg., var. whorls sharply angular.
1507 round.
1508 Between the large rounded varieties of the last and the *N.*
pura, Marr.
1509 Between the *rotundicostata* and *pura*, Marr.
1510 *Gemmulifera*, A. Ad., var. sharply ribbed and noded.
1511 *Jacksoniana*, Quoy. and Gaim., var. broad, passing into the
N. tiarula, Kien.
1512 narrow and elongated.

CORRECTIONS.

- 624 for *dentifera* read *costellifera*—
 { Borneo, Dr. Collingwood.
 { Philippines, Cuming.
 { Island of Vanikoro, Quoy. & Gaim.
 693 *N. densigranata*, A. Ad. Reeve, pl. 27, f. 181, is *N.*
splendidula, D'kr.
 869 For *sculpta*, Marr., read *scalpta* in both cases.
 872 For *N. Gibbsii* read *Gibbesii*.
 1048 For *granifera*, Kien., read *clathrata*, Kien.
 1137 For *arbiculata* read *orbiculata*.
 Page 91, 9th line from top, for *for* read *of*.
 1176 For *N. spinosa*, Lam., read *N. sub-spinosa*, Lam.
 1221 *N. incrassata*, Marr., read *incrassata*, Müll.
 After No. 1269, place *Alexandria*.
 Page 94, 4th line from top, for *kraussii* read *crosscanus*.

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